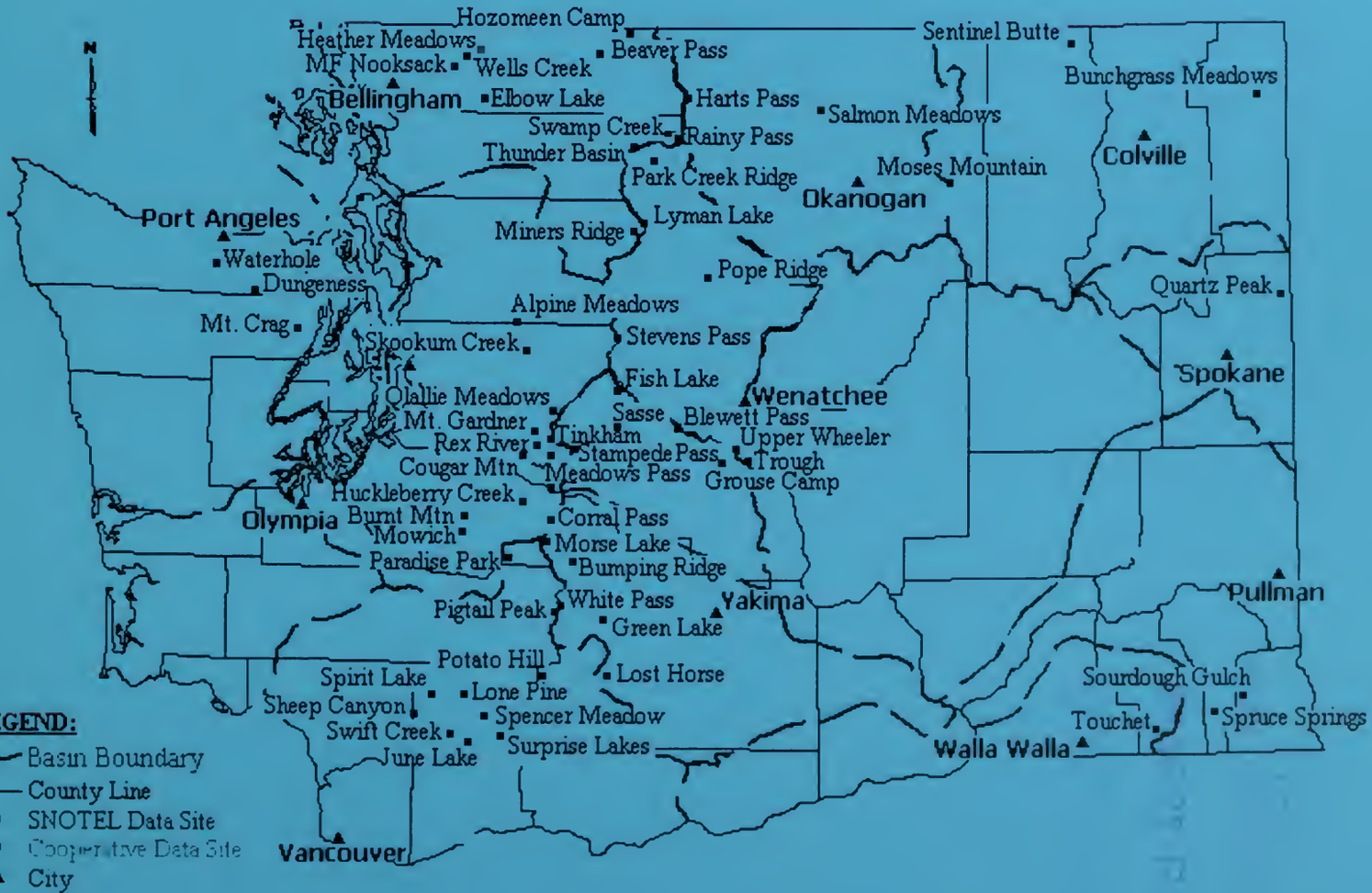
United States Department of Agriculture

Conservation Service

Washington Water Supply Outlook Report March 1, 2004



Water Supply Outlook Reports
and
Federal - State – Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Washington
Water Supply Outlook

March 2004

General Outlook

Below average precipitation in the form of both valley rain and mountain snow has drug overall conditions down in most of Washington. Streamflow forecasts for summer flows have been reduced in many areas due to the lack of precipitation. The storms that we did receive during the month only served to maintain snowpack in some locations. Other locations showed notable decreases. According to the National Weather Service, off-shore conditions are limiting their ability to positively forecast conditions for the next few months. Earlier indicators warranted near normal conditions for March and April but at this time there are equal chances of above, below or normal weather systems entering the Pacific Northwest.

Snowpack

The March 1 statewide SNOTEL readings dropped from near normal last month to 94% of average. The Chelan Lake Basin snow surveys reported the lowest readings at 68% of average. Readings in the Tolt River Basin reported the highest at 135% of average. Westside averages from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 91% of average, the Central Puget river basins with 116%, and the Lewis-Cowlitz basins with 105% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 93% and the Wenatchee area with 77%. Snowpack in the Spokane River Basin was at 101% and the Walla Walla River Basin had 102% of average. Maximum snow cover in Washington was at Paradise Park SNOTEL near Mt. Rainer, with water content of 63.7 inches. This site would normally have 59.7 inches of water content on March 1. Last year at this time Paradise Park had 34.2 inches of snow water. The highest average in the state was Skookum Creek SNOTEL in the Tolt River Basin with 159% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE	PERCENT NEEDED TO REACH PEAK
Spokane	191	101	147
Newman Lake	178	104	-14
Pend Oreille	121	92	165
Okanogan	126	89	325
Methow	117	94	"
Similkameen	182	98	"
Wenatchee	121	83	730
Chelan	100	68	340
Stemilt - Colockum	103	107	-160
Upper Yakima	148	88	269
Lower Yakima	135	98	104
Ahtanum Creek	132	105	"
Walla Walla	177	102	-11
Lower Snake	140	99	85
Cowlitz	170	99	66
Lewis	215	111	-288
White	133	98	100
Green	233	97	100
Cedar	258	110	-43
Snoqualmie	234	108	
Skykomish	238	108	
Skagit	133	82	280
Baker	152	87	
Nooksack	217	103	85
Olympic Peninsula	149	93	210

Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations reported below average precipitation totals throughout Washington river basins. The highest percent of average in the state was at the Yakima Airport which reported 175% of average for a total of 1.4 inches. The average for this site is 0.80 inches for February. The wettest spot in the state was reported at Swift Creek SNOTEL near Mt. Saint Helens with a February accumulation of 14.5 inches. Basin averages for the water year dropped across the state, due to a very dry February, but mostly remain near to above average.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	53	92
Colville-Pend Oreille	45	87
Okanogan-Methow	69	98
Wenatchee-Chelan	46	93
Upper Yakima	49	97
Lower Yakima	59	92
Walla Walla	79	103
Lower Snake	85	101
Cowlitz-Lewis	62	87
White-Green-Puyallup	51	93
Central Puget Sound	48	101
North Puget Sound	35	108
Olympic Peninsula	85	115

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation and flood control. Reservoir storage in the Upper Yakima Basin was 348,600-acre feet, 70% of average and 103,400-acre feet, 75% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 60% of average for March 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 99,500 acre feet, 69% of average and 42% of capacity; Chelan Lake, 316,000-acre feet, 126% of average and 47% of capacity; and the Skagit River reservoirs at 86% of average and 52% of capacity.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	42	69
Colville-Pend Oreille	N/A	N/A
Okanogan-Methow	44	60
Wenatchee-Chelan	47	126
Upper Yakima	42	70
Lower Yakima	45	75
North Puget Sound	52	86

For more information contact your local Natural Resources Conservation Service office.

Streamflow

March forecasts for April-September flows vary from 115% of average for Grande Ronde at Troy to 72% of average for Salmon Creek near Conconully and Teanaway River near Cle Elum. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 104%; Green River, 103%; and Skagit River, 93%. Some Eastern Washington streams include the Yakima River near Parker, 94%: Wenatchee River at Plain, 74%; and Spokane River near Post Falls, 91%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Statewide February streamflows were also below average. The South Fork Walla Walla River near Milton, OR had the highest reported flows with 100% of average. The Tieton River below Tieton with 52% of average was the lowest in the state. Other streamflows were the following percentage of average: the Cowlitz at Castle Rock, 82%; the Spokane at Spokane, 63%; the Columbia below Rock Island Dam, 70%; and the Cle Elum near Roslyn, 67%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	91-94
Colville-Pend Oreille	73-92
Okanogan-Methow	72-84
Wenatchee-Chelan	74-112
Upper Yakima	72-88
Lower Yakima	85-95
Walla Walla	98-100
Lower Snake	95-115
Cowlitz-Lewis	90-103
White-Green-Puyallup	103
Central Puget Sound	100-107
North Puget Sound	93-94
Olympic Peninsula	99-100

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
Pend Oreille Below Box Canyon	61
Kettle at Laurier	53
Columbia at Birchbank	73
Spokane at Long Lake	64
Similkameen at Nighthawk	76
Okanogan at Tonasket	56
Methow at Pateros	95
Chelan at Chelan	87
Wenatchee at Pashastin	74
Yakima at Cle Elum	66
Yakima at Parker	57
Naches at Naches	53
Grande Ronde at Troy	72
Snake below Lower Granite Dam	63
SF Walla Walla near Milton Freewater	100
Columbia River at The Dalles	74
Lewis at Ariel	79
Cowlitz below Mayfield Dam	88
Skagit at Concrete	60

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BASIN SUMMARY OF SNOW COURSE DATA

MARCH 2004

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
AHTANUM R.S.	3100	2/25/04	25	8.0	5.4	7.0
ALPINE MEADOWS	3500	3/01/04	---	44.0E	11.5	33.8
ALPINE MEADOWS SNTL	3500	3/01/04	95	47.8	12.1	36.5
AMBROSE	6480	2/26/04	38	9.8	10.2	10.5
ASHLEY DIVIDE	4820	2/24/04	22	6.2	2.4	6.2
BADGER PASS SNOTEL	6900	3/01/04	62	23.2	17.8	29.7
BAIRD #2	3220	2/23/04	24	6.9	5.5	--
BAREE MIDWAY	4600	2/23/04	80	29.3	18.5	28.7
BAREE TRAIL	3800	2/23/04	33	11.6	5.9	8.2
BARKER LAKES SNOTEL	8250	3/01/04	46	10.3	10.2	11.1
BARNES CREEK CAN.	5320	3/02/04	50	14.1	15.1	17.3
BASIN CREEK SNOTEL	7180	3/01/04	31	6.1	6.2	6.1
BASSOO PEAK	5150	2/27/04	28	7.2	6.4	9.0
BEAVER CREEK TRAIL	2200	2/25/04	37	14.6	7.3	13.0
BEAVER PASS	3680	2/25/04	59	22.1	15.1	24.9
BEAVER PASS SNOTEL	3680	3/01/04	---	28.2	21.2	--
BERNE-MILL CREEK (d)	3170	3/01/04	65	24.0	15.0	25.3
BIG WHITE MTN CAN.	5510	3/02/04	47	13.9	12.9	16.8
BLACK MOUNTAIN	7750	2/24/04	40	11.0	11.8	11.4
BLACK PINE SNOTEL	7100	3/01/04	32	8.0	9.8	10.1
BLACKWALL PEAK CAN.	6370	3/01/04	60	23.2	17.0	30.0
BLEWETT PASS #2	4270	2/27/04	40	12.1	--	14.1
BLEWETT PASS#2SNOTEL	4270	3/01/04	38	11.6	11.2	15.7
BLUE LAKE	5900	2/23/04	45	14.8	10.9	21.1
BRENDA MINE CAN.	4450	3/01/04	---	12.1	8.3	11.3
BRIEF	1600	2/26/04	19	7.4	7.1	6.9
BROOKMERE CAN.	3000	2/28/04	26	5.9	4.4	7.6
BROWN TOP AM	6000	2/25/04	118	45.0	36.8	53.4
BROWNS PASS		2/24/04	19	3.8	4.5	--
BRUSH CREEK TIMBER	5000	2/24/04	26	6.4	3.5	7.5
BULL MOUNTAIN	6600	2/26/04	18	3.0	6.2	5.1
BUMPING LAKE (NEW)	3400	2/24/04	46	14.7	13.6	16.9
BUMPING RIDGE SNOTEL	4600	3/01/04	74	24.4	16.0	24.9
BUNCHGRASS MDWSNOTEL	5000	3/01/04	---	22.8	24.6	24.4
BURNT MOUNTAIN PIL	4200	3/01/04	40	15.7	5.6	--
BUTTERMILK BUTTE		2/25/04	39	10.5	12.3	--
CARMI CAN.	4100	3/04/04	29	6.3	3.9	5.8
CAYUSE PASS	5300	2/26/04	150	58.4E	45.2	64.8
CHESSMAN RESERVOIR	6200	2/24/04	11	2.9	2.0	3.1
CHEWALAH #2	4930	2/27/04	47	14.0	12.6	--
CHICKEN CREEK	4060	2/26/04	53	17.1	11.1	14.4
CHIWAUKUM G.S.	2500	3/01/04	26	8.2	7.2	10.8
CODY BUTTE	4650	2/25/04	11	3.3	1.5	--
COLD CREEK STRIP	6020	2/23/04	25	6.0	8.3	--
COLOCKUM PASS	5370	3/01/04	51	14.3	--	14.6
COMBINATION SNOTEL	5600	3/01/04	17	4.8	5.6	4.5
COPPER BOTTOM SNOTEL	5200	3/01/04	32	9.3	6.8	9.9
COPPER CAMP	6950	2/27/04	62	23.6	--	--
COPPER CREEK	5700	2/27/04	30	9.5	5.6	12.5
COPPER MOUNTAIN	7700	2/21/04	31	8.0	7.9	8.9
CORNER CREEK	3150	3/02/04	27	8.7	1.2	6.7
CORRAL PASS SNOTEL	6000	3/01/04	---	29.9	20.9	29.5
COTTONWOOD CREEK	6400	2/24/04	27	7.4	6.2	6.0
COUGAR MTN. SNOTEL	3200	3/01/04	36	14.1	3.6	17.1
COX VALLEY	4500	2/27/04	82	30.1	18.1	31.7
COYOTE HILL	4200	2/25/04	31	9.2	5.4	9.1
DALY CREEK SNOTEL	5780	3/01/04	33	9.3	9.6	9.4
DESERT MOUNTAIN	5600	2/25/04	41	12.7	8.6	12.6
DEVILS PARK	5900	2/26/04	87	34.6	25.6	37.9
DISAUTEL PASS		2/24/04	19	4.2	5.6	--
DISCOVERY BASIN	7050	2/23/04	34	8.8	9.1	8.4
DIX HILL	6400	2/29/04	29	8.0	7.6	10.0
DOMMERIE FLATS	2200	2/23/04	22	8.3	.0	7.2
DUNCAN RIDGE	5370	2/23/04	21	5.0	5.5	--
DUNGENESS SNOTEL	4100	3/01/04	24	4.6	4.0	--
EAST FORK R.S.	5400	2/23/04	25	5.8	5.3	5.6
EASY PASS AM	5200	3/01/04	---	55.0E	45.5	65.1
EL DORADO MINE	7800	2/28/04	54	15.5	15.6	15.8
ELBOW LAKE SNOTEL	3200	3/01/04	73	33.4	13.2	34.3
EMERY CREEK SNOTEL	4350	3/01/04	50	15.0	9.5	13.3
ENDERBY CAN.	5800	2/29/04	80	27.2	28.0	33.8
ESPERON CK. UP CAN.	5050	2/28/04	48	13.8	8.3	14.6
FARRON CAN.	4000	2/24/04	37	11.3	8.6	11.3
FATTY CREEK	5500	3/01/04	---	19.0E	14.9	20.4
FISH CREEK	8000	2/24/04	25	6.4	6.6	7.8
FISH LAKE	3370	2/23/04	72	28.4	19.5	29.9
FISH LAKE SNOTEL	3370	3/01/04	67	25.1	17.5	30.6
FLATTOP MTN SNOTEL	6300	3/01/04	97	32.8	30.4	39.2
FLEECER RIDGE	7500	2/26/04	29	8.0	8.8	9.2
FOURTH OF JULY SUM	3200	2/27/04	20	6.6	1.0	8.2
FREEZEOUT CK. TRAIL	3500	2/26/04	33	11.1	5.7	11.3
FROHNER MDWS SNOTEL	6480	3/01/04	26	6.2	6.3	6.3
FROST MEADOWS	4630	2/27/04	51	15.6	--	--
GOAT CREEK	3600	3/01/04	25	6.8	5.6	6.1
GOLD MTN		2/26/04	34	8.7	8.5	--
GRASS MOUNTAIN #2	2900	2/29/04	28	11.8	.7	9.8
GRAVE CRK SNOTEL	4300	3/01/04	54	16.1	11.6	14.5
GREEN LAKE SNOTEL	6000	3/01/04	64	21.1	16.0	19.7
GREYBACK RES CAN.	4700	2/27/04	31	7.7	7.5	7.8
GRIFFIN CR DIVIDE	5150	2/27/04	26	7.1	4.5	9.5
GROUSE CAMP SNOTEL	5380	3/01/04	55	16.9	16.5	17.6
HAMILTON HILL CAN.	4550	3/01/04	34	11.1	5.5	12.7
HAND CREEK SNOTEL	5030	3/01/04	34	9.6	5.7	9.9
HARTS PASS SNOTEL	6500	3/01/04	76	29.4	20.3	39.7
HELL ROARING DIVIDE	5770	2/25/04	66	23.9	20.0	25.8
HERRIG JUNCTION	4850	2/26/04	69	21.1	19.4	22.2
HIGH RIDGE SNOTEL	4980	3/01/04	---	22.6	12.9	21.2
HOLBROOK	4530	2/29/04	24	7.4	5.1	8.3
HOODOO BASIN SNOTEL	6050	3/01/04	90	30.5	23.4	38.6
HUCKLEBERRY SNOTEL	2000	3/01/04	6	.4	.0	--
HUMBOLDT GLCH SNOTEL	4250	3/01/04	---	11.3	2.9	11.7
HURRICANE	4500	3/01/04	---	14.5E	4.2	15.6
INTERGAARD	6450	2/29/04	25	5.5	5.8	6.2
IRENE'S CAMP	5530	2/23/04	30	7.5	7.8	--
ISINTOK LAKE CAN.	5100	2/26/04	28	5.5	2.6	6.5
JUNE LAKE SNOTEL	3200	3/01/04	96	33.7	11.8	33.9
KELLER RIDGE	3700	2/25/04	18	5.0	4.5	--
KELLOGG PEAK	5560	2/29/04	69	25.8	13.4	25.8
KISHENEHN	3890	2/28/04	33	8.7	4.7	7.3
KIT CARSON PASTURE	4950	2/27/04	27	7.4	8.9	8.2
KLESILKWA CAN.	3450	3/01/04	25	7.7	2.5	10.5
KRAFT CREEK SNOTEL	4750	3/01/04	35	11.6	10.0	13.6
LESTER CREEK	3100	2/29/04	48	16.3	7.8	17.2
LOGAN CREEK	4300	2/24/04	25	6.7	3.7	6.2
LOLO PASS SNOTEL	5240	3/01/04	73	24.6	22.4	26.8
LONE PINE SNOTEL	3800	3/01/04	---	39.3	16.7	31.7
LOOKOUT SNOTEL	5140	3/01/04	71	26.1	13.9	27.2
LOST HORSE MTN CAN.	6300	2/29/04	30	8.1	3.9	8.0
LOST HORSE SNOTEL	5000	3/01/04	54	18.0	14.2	18.3
LOST LAKE SNOTEL	6110	3/01/04	---	44.0	27.2	50.7
LOUP LOUP CAMPGROUND		2/27/04	30	7.8	9.2	--
LOWER SANDS CREEK #2	3120	3/02/04	50	18.5	7.9	16.6
LUBRECHT FOREST NO 3	5450	2/27/04	18	4.6	3.6	5.6
LUBRECHT FOREST NO 4	4650	2/27/04	9	2.5	1.6	2.7
LUBRECHT FOREST NO 6	4040	2/26/04	10	3.1	1.8	3.2
LUBRECHT HYDROPLOT	4200	2/26/04	16	4.5	3.6	5.1
LUBRECHT SNOTEL	4680	3/01/04	19	5.4	4.2	5.3
LYMAN LAKE SNOTEL	5900	3/01/04	---	31.6	40.8	55.1
LYNN LAKE	4000	2/29/04	59	21.5	5.8	16.1
MARIAS PASS	5250	3/02/04	43	12.5	7.3	14.9
MEADOWS CABIN	1900	2/26/04	8	2.0	1.6	5.5
MEADOWS PASS SNOTEL	3240	3/01/04	57	23.8	10.9	19.8
MERRITT	2140	3/01/04	28	9.3	7.7	14.2
METEOR		2/26/04	18	5.2	4.2	--
M F NOOKSACK SNOTEL	4980	3/01/04	126	51.5	31.7	--
MICA CREEK SNOTEL	4750	3/01/04	69	26.6	13.5	23.2
MINERAL CREEK	4000	2/28/04	55	17.8	11.8	15.8
MINERS RIDGE SNOTEL	6200	3/01/04	---	32.4	27.3	45.2
MISSION CREEK CAN.	5840	3/01/04	---	16.7	12.0	17.1
MISSION RIDGE	5000	2/26/04	59	16.1	14.7	15.2
MONASHEE PASS CAN.	4500	3/02/04	37	11.1	8.0	11.8
MORSE LAKE SNOTEL	5400	3/01/04	---	44.0	38.5	47.0
MOSES MOUNTAIN (2)	4800	2/27/04	39	10.3	13.5	17.5
MOSES MTN SNOTEL	4800	3/01/04	39	8.9	13.3	13.4
MOSES PEAK	6650	3/01/04	54	15.0	11.5	11.7
MOSQUITO RDG SNOTEL	5200	3/01/04	---	34.2	21.6	31.1
MOULTON RESERVOIR	6850	2/24/04	28	7.1	7.6	6.2
MOUNT CRAG SNOTEL	4050	3/01/04	75	26.9	18.7	26.8
MT. KOBAU CAN.	5500	2/28/04	37	9.1	10.2	10.2
MOUNT TOLMAN	2000	2/24/04	8	2.4	1.2	3.3
MOUNT GARDNER SNOTEL	2860	3/01/04	---	14.8	3.4	14.1
MUTTON CREEK #1	5700	2/27/04	44	11.4	13.0	12.0
N.F. ELK CR SNOTEL	6250	3/01/04	36	9.8	8.7	10.2
NEVADA RIDGE SNOTEL	7020	3/01/04	43	11.5	11.5	13.2
NEW HOZOMEEN LAKE	2800	2/26/04	24	7.0	5.0	10.3
NEZ PERCE CMP SNOTEL	5650	3/01/04	42	12.4	10.2	12.7
NEZ PERCE PASS	6570	2/27/04	43	13.5	12.7	15.7
NOISY BASIN SNOTEL	6040	3/01/04	89	29.9	24.4	33.8
OLALLIE MDWS SNOTEL	3960	3/01/04	91	42.7	27.3	48.9
OLALLIE MEADOWS	3630	3/01/04	---	32.0E	20.0	36.7
OPHIR PARK	7150	2/29/04	38	10.7	10.2	14.1
OYAMA LAKE CAN.	4100	2/27/04	27	7.0	3.2	6.2
PARADISE PARK SNOTEL	5500	3/01/04	---	63.7	34.2	59.7
PARK CK RIDGE SNOTEL	4600	3/01/04	89	34.6	30.1	44.1
PETERSON MDW SNOTEL	7200	3/01/04	35	7.8	9.1	7.8
PIGTAIL PEAK SNOTEL	5900	3/01/04	126	49.1	34.6	44.6
PIKE CREEK SNOTEL	5930	3/01/04	55	18.7	13.1	22.8
PIPESTONE PASS	7200	2/22/04	14	3.0	3.4	4.1
POPE RIDGE SNOTEL	3540	3/01/04	46	13.3	14.9	18.5
POSTILL LAKE CAN.	4200	2/27/04	31	8.7	4.8	7.3
POTATO HILL SNOTEL	4500	3/01/04	---	24.2	15.2	23.6
QUARTZ PEAK SNOTEL	4700	3/01/04	59	19.6	13.2	19.5
RAGGED RIDGE	3330	2/26/04	26	8.8	2.8	7.8
RAINY PASS SNOTEL	4780	3/01/04	77	26.0	25.9	38.2
REX RIVER SNOTEL	1900	3/01/04	70	31.9	9.8	23.9
ROCKER PEAK SNOTEL	8000	3/01/04	39	9.4	10.8	11.2

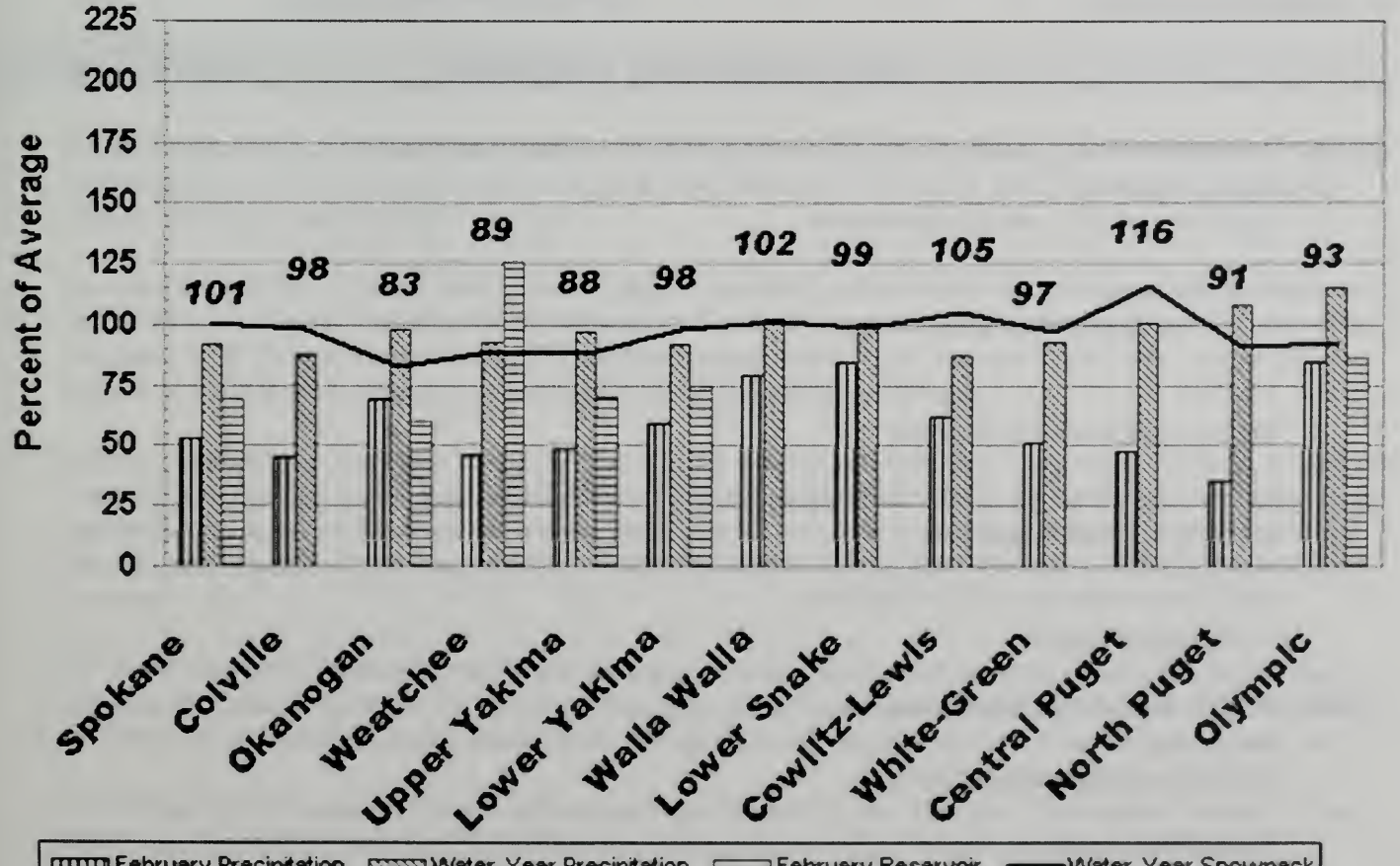
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ROCKY CREEK AM	2100	3/01/04	---	25.0E	7.0	26.5
ROLAND SUMMIT	5120	2/27/04	86	34.3	19.9	29.2
ROUND TOP MTN	4020	2/24/04	39	13.1	6.3	--
RUSTY CREEK	4000	2/27/04	24	6.0	7.0	6.2
SADDLE MTN SNOTEL	7900	3/01/04	67	19.1	20.7	21.8
SAGE CREEK SADDLE	4080	3/02/04	48	18.3	7.8	15.5
SALMON MDWS SNOTEL	4500	3/01/04	36	8.6	9.8	10.1
SASSE RIDGE SNOTEL	4200	3/01/04	72	25.8	19.5	30.3
SATUS PASS	4030	2/26/04	41	13.0	6.0	9.6
SAVAGE PASS SNOTEL	6170	3/01/04	78	20.4	20.3	22.5
SAWMILL RIDGE	4700	2/29/04	82	29.1	14.0	28.6
SENTINEL BT SNOTEL	4920	3/01/04	34	8.2	--	--
SHEEP CANYON SNOTEL	4050	3/01/04	---	29.7	8.6	31.6
SHELL ROCK	4500	2/27/04	25	6.3	--	--
SHERWIN SNOTEL	3200	3/01/04	---	10.6	4.0	10.8
SILVER STAR MTN CAN.	5600	2/29/04	61	20.8	18.0	25.0
SKALKAHO SNOTEL	7260	3/01/04	52	16.3	18.1	20.2
SKITWISH RIDGE	5110	3/02/04	86	29.4	18.1	27.2
SKOOKUM CREEK SNOTEL	3920	3/01/04	56	30.1	5.3	18.9
SLIDE ROCK MOUNTAIN	7100	3/01/04	36	9.6	10.0	12.6
SOURDOUGH GULCH SNTL	4000	3/01/04	0	.0	.4	--
SPENCER MDW SNOTEL	3400	3/01/04	---	31.4	12.9	28.6
SPIRIT LAKE SNOTEL	3100	3/01/04	---	8.7	2.1	--
SPOTTED BEAR MTN.	7000	2/23/04	37	11.6	9.2	12.7
SPRUCE SPRINGS SNTL	5700	3/01/04	40	13.6	10.5	--
STARVATION CANYON	6750	2/27/04	46	13.0	13.7	16.6
STAHL PEAK SNOTEL	6030	3/01/04	86	26.6	23.2	29.9
STAMPEDE PASS SNOTEL	3860	3/01/04	86	34.3	22.6	39.8
STEMILT SLIDE	5000	3/01/04	45	12.8	11.5	12.8
STEMPLE PASS	6600	2/23/04	26	6.6	5.6	8.3
STEVENS PASS SNOTEL	4070	3/01/04	90	31.2	21.6	38.3
STEVENS PASS SAND SD	3700	3/01/04	73	27.1	18.0	30.6
STORM LAKE	7780	2/23/04	38	9.0	9.8	10.2

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
STRYKER BASIN	6180	2/26/04	73	23.4	20.0	26.5
SUMMERLAND RES CAN.	4200	2/25/04	31	8.2	4.3	8.4
SUNSET SNOTEL	5540	3/01/04	---	18.9	10.8	26.6
SURPRISE LKS SNOTEL	4250	3/01/04	---	45.2	28.3	40.3
SWAMP CREEK SNOTEL	4000	3/01/04	41	15.6	11.7	--
TEN MILE LOWER	6600	2/24/04	23	5.9	6.0	5.5
TEN MILE MIDDLE	6800	2/24/04	28	7.4	7.6	8.5
THUNDER BASIN	4200	2/26/04	52	16.8	13.0	19.6
THOMPSON CREEK	2500	2/26/04	19	6.4	.0	--
THOMPSON RIDGE		2/25/04	34	8.2	--	--
TINKHAM CREEK SNOTEL	3000	3/01/04	---	22.5	11.9	26.7
TOATS COULEE	2850	2/23/04	13	2.6	3.9	3.4
TOUCHET SNOTEL	5530	3/01/04	83	27.9	15.7	28.5
TRINKUS LAKE	6100	2/23/04	86	32.6	26.4	36.4
TROUGH #2 SNOTEL	5310	3/01/04	43	11.2	12.5	9.1
TROUT CREEK CAN.	5650	3/01/04	30	8.0	4.6	6.7
TRUMAN CREEK	4060	2/24/04	16	4.8	2.4	4.4
TUNNEL AVENUE	2450	3/01/04	---	16.5E	8.6	18.6
TV MOUNTAIN	6800	3/01/04	---	12.7E	10.3	15.2
TWELVEMILE SNOTEL	5600	3/01/04	50	15.9	11.9	16.6
TWIN CAMP	4100	2/29/04	51	19.2	8.3	21.5
TWIN CREEKS	3580	2/23/04	34	10.8	4.2	10.2
TWIN LAKES	2700	2/26/04	22	5.9	6.5	6.7
TWIN LAKES SNOTEL	6400	3/01/04	89	35.0	29.8	34.7
UPPER HOLLAND LAKE	6200	2/23/04	73	27.4	23.2	30.6
UPPER WHEELER SNOTEL	4400	3/01/04	47	13.5	11.2	11.1
VASEUX CREEK CAN.	4250	2/27/04	20	4.0	3.0	5.5
WARM SPRINGS SNOTEL	7800	3/01/04	57	16.4	17.4	17.6
WATERHOLE SNOTEL	5000	3/01/04	81	24.2	22.3	--
WEASEL DIVIDE	5450	2/27/04	79	26.2	17.4	28.7
WELLS CREEK SNOTEL	4200	3/01/04	80	30.0	16.0	27.1
WHITE PASS ES SNOTEL	4500	3/01/04	64	19.5	12.8	21.8
WHITE ROCKS MTN CAN.	7200	2/26/04	57	15.2	11.6	19.6

NRCS Natural Resources Conservation Service

March 1, 2004 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2003 - Current Date)



USDA NRCS

Natural Resources Conservation Service

Washington State

Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
http://www.wa.nrcs.usda.gov/snow/snow

Oregon:
http://www.or.nrcs.usda.gov/snow/snow

Idaho:
http://www.id.nrcs.usda.gov/snow

National Water and Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov

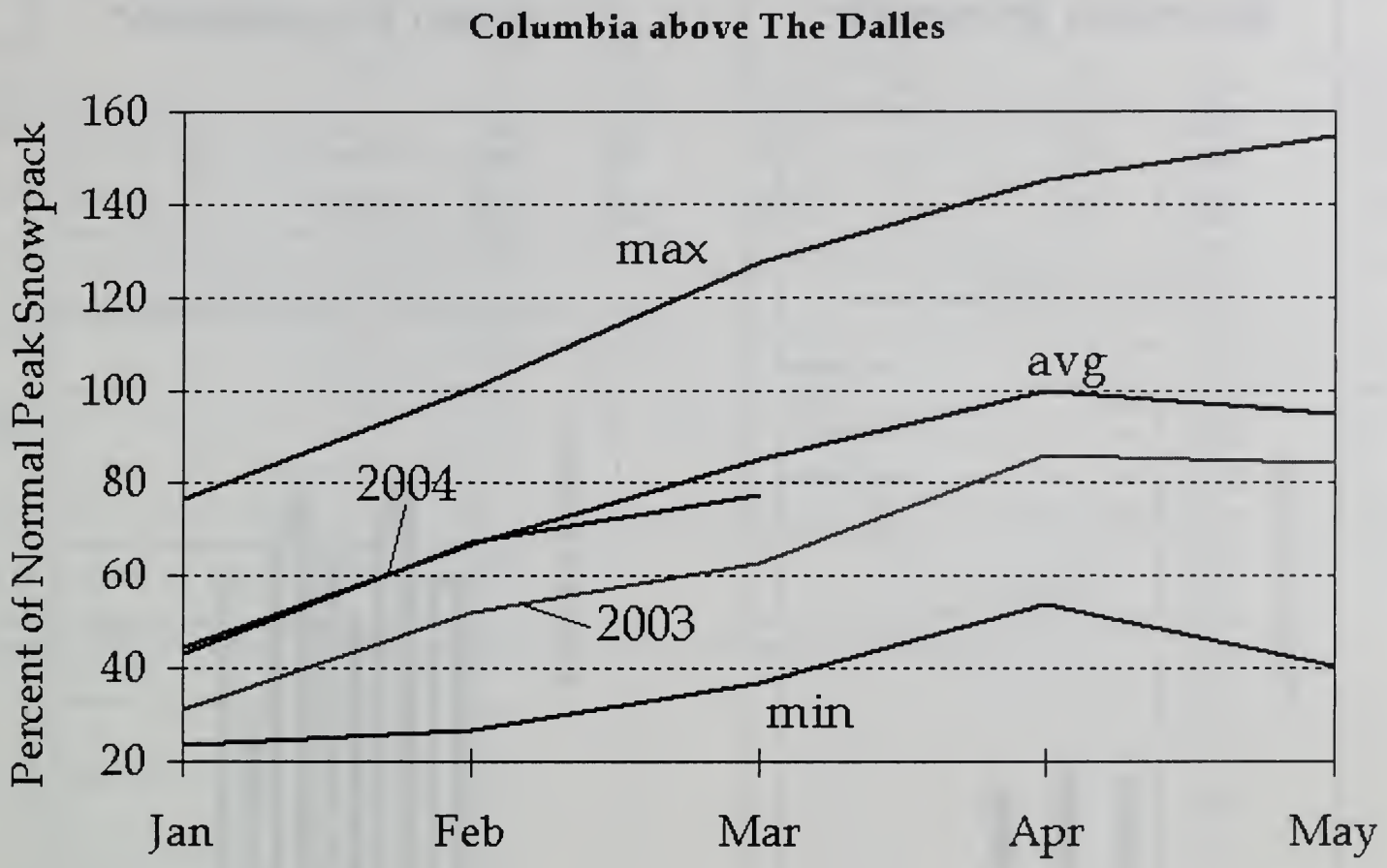
NWCC Anonymous FTP Server:
ftp.wcc.nrcs.usda.gov

USDA-NRCS Agency Homepages

Washington:
http://www.wa.nrcs.usda.gov/nrcs

NRCS National:
http://www.nrcs.usda.gov

Columbia Basin Snowpack Summary



March 5, 2004

The Columbia Basin snowpack was 91 percent of average on March 1. This compares to 101 percent of average on February 1 and 74 percent last year at the same time. The overall snowpack is at 78 percent of the average peak accumulation; slightly below average.

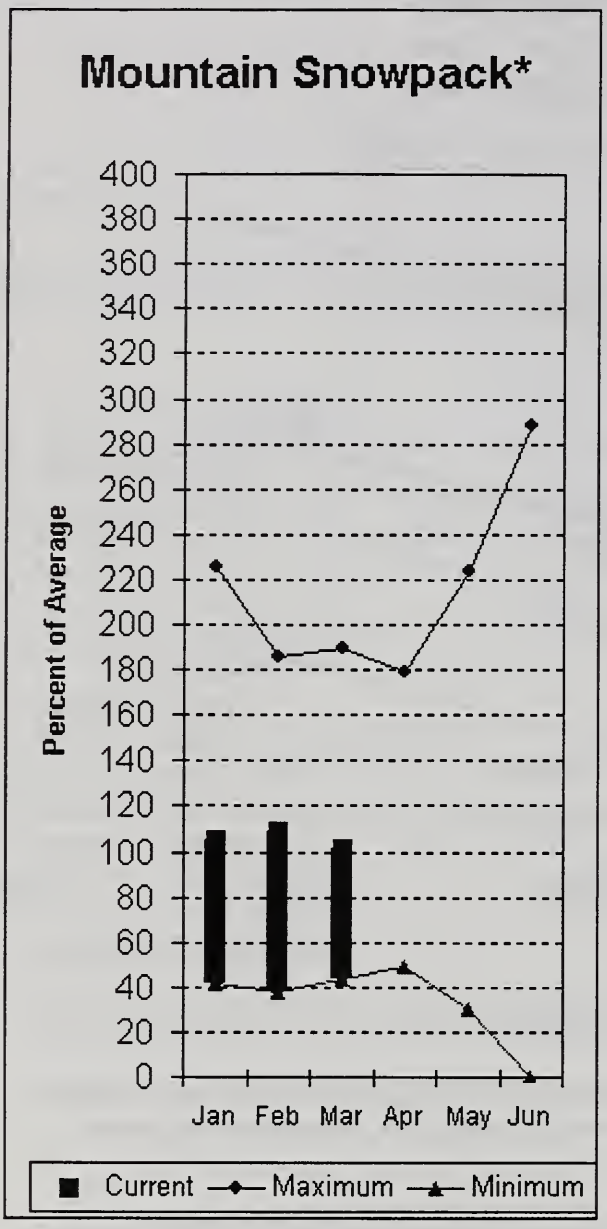
The snowpack in the Columbia Basin above Castlegar was at 84 percent of average on March 1. This compares to 96 percent of average last month. For the basin above Grand Coulee, the snowpack was at 87 percent of average, compared to 99 percent for last month. The snowpack in the Snake River area above Ice Harbor was at 100 percent of average for February 1. Last month it was at 106 percent of average.

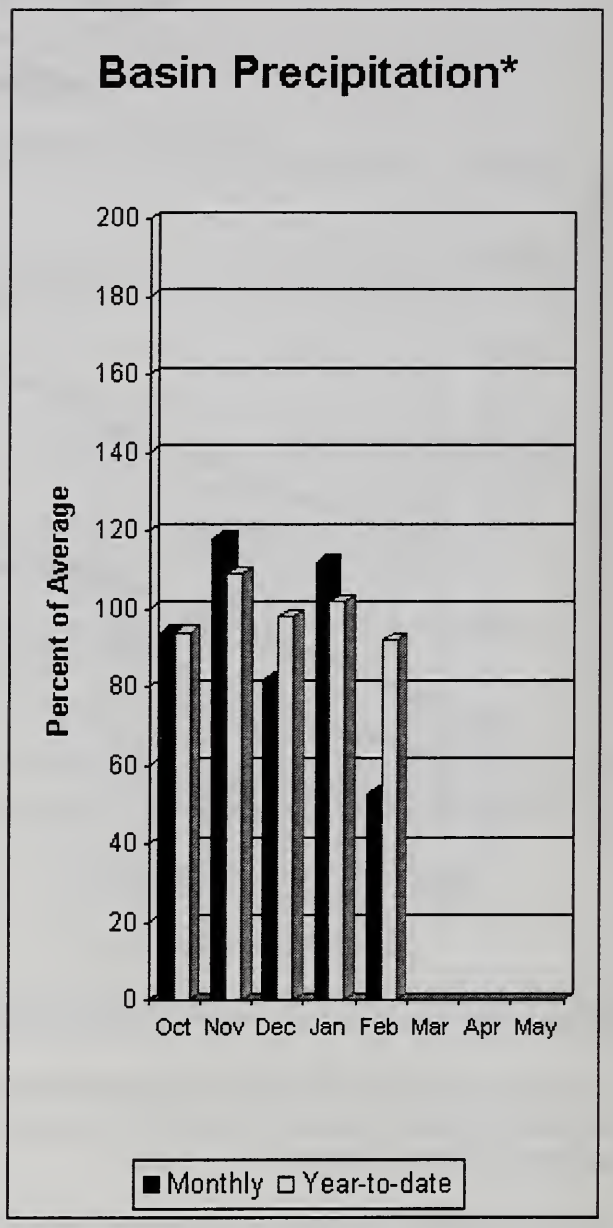
February precipitation was much below average over the Washington Cascades, Clearwater, Flathead, Clark Fork, Pend Oreille, Spokane, and Canadian basins. Below normal precipitation was also reported over the Upper Snake and Salmon river basins. Much above average precipitation was measured over the Deschutes, Southern Idaho, and SE Oregon basins. Overall, precipitation (where it counts) was way down over the Columbia Basin during February.

For the season, precipitation has been below average over the Washington Cascades, Okanogan, Similkameen, Spokane, Flathead, Clark Fork, Salmon, and Clearwater basins. Very good precipitation has been reported over the Deschutes and eastern Oregon basins. Near average seasonal precipitation was measured everywhere else.

Most streamflow forecasts have been reduced over the Columbia Basin. The April- September forecast for the Columbia River at The Dalles is 87.4 million acre- feet, down from 93.5 million acre-feet on February 1.

Spokane River Basin





*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 91% of average near Post Falls and 94% at Long Lake. The Chamokane River near Long Lake forecasted to have 73% of average flows for the May-August period. The forecast is based on a basin snowpack that is 101% of average and precipitation that is 92% of average for the water year. Precipitation for February was much below normal at 53% of average. Streamflow on the Spokane River at Long Lake was 64% of average for February. March 1 storage in Coeur d'Alene Lake was 99,500-acre feet, 69% of average and 42% of capacity. Snowpack at Quartz Peak SNOTEL site was 101% of average with 19.6 inches of water content. Temperatures in the Spokane basin were 1 degree below average for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

SPOKANE RIVER BASIN
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	APR-SEP	1840	2190	2420	91	2650	3000	2650
	APR-JUL	1770	2100	2330	91	2560	2890	2550
SPOKANE at Long Lake (2)	APR-JUL	2030	2420	2680	94	2940	3330	2850
	APR-SEP	2200	2610	2890	94	3170	3580	3070

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	99.5	101.7	144.9

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2004

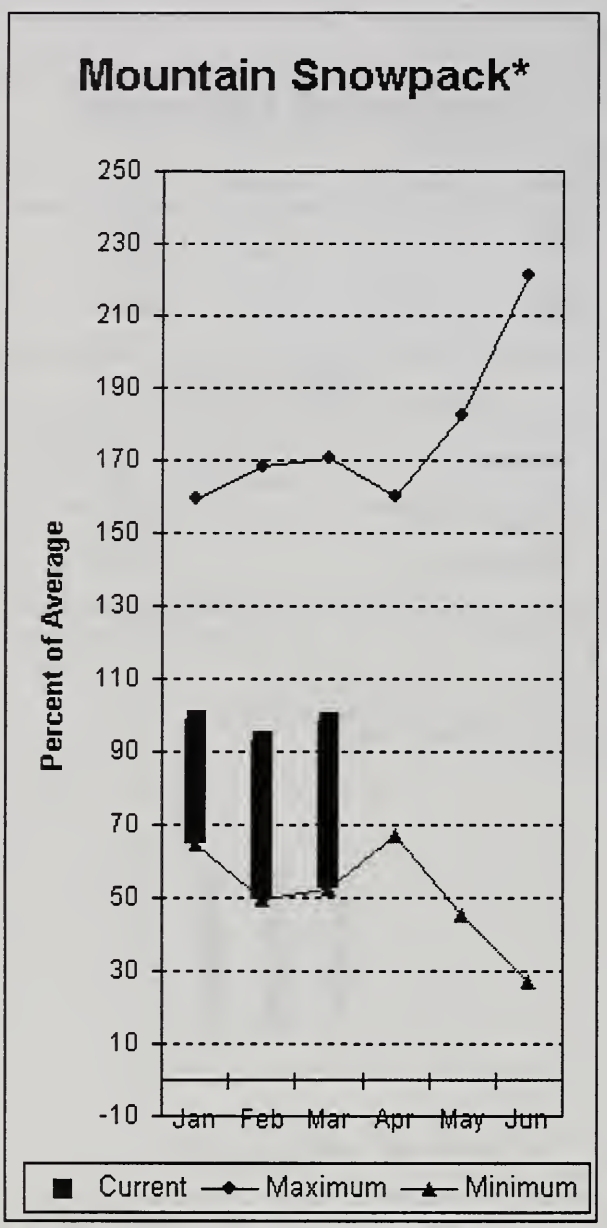
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	16	191	101
NEWMAN LAKE	2	178	104

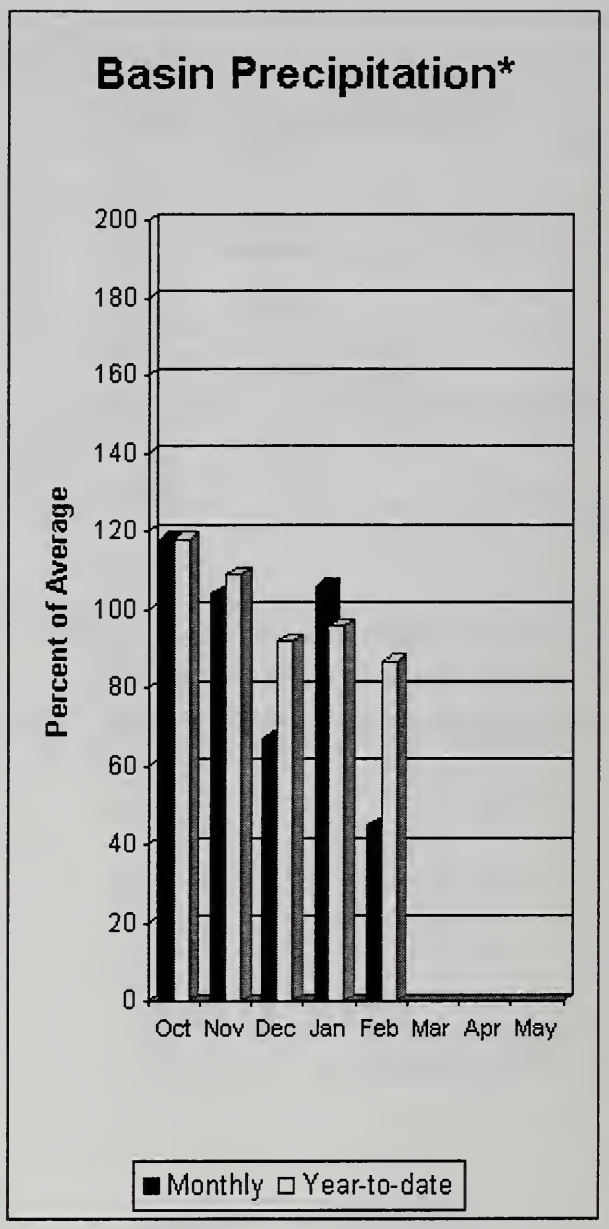
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Colville - Pend Oreille River Basins





*Based on selected stations

The April – September average forecast for the Kettle River streamflow is 88%, Colville at Kettle Falls is 79%, and Priest River near the Town of Priest River is 86%. February streamflow was 61% of average on the Pend Oreille River, 73% on the Columbia at the International Boundary and 53% on the Kettle River. March 1 snow cover was 92% of average in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 22.8 inches of snow water on the snow pillow. Normally Bunchgrass would have 24.4 inches on March 1. Precipitation during February was 45% of average, bringing the year-to-date precipitation to 87% of average. Average temperatures were 1 degree below normal for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (2)	APR-JUL	8630	10040	11000	87	11960	13370	12700
	APR-SEP	9400	10950	12000	86	13050	14600	13900
PRIEST near Priest River (1,2)	APR-JUL	560	655	700	86	745	840	815
	APR-SEP	515	675	745	86	815	970	870
PEND OREILLE bl Box Canyon (2)	APR-JUL	9200	10450	11300	88	12150	13400	12900
	APR-SEP	9800	11350	12400	88	13450	15000	14100
CHAMOKANE CREEK near Long Lake	MAY-AUG	4.5	5.8	7.4	73	9.0	11.3	10.2
COLVILLE at Kettle Falls	APR-SEP	73	96	111	79	126	149	141
	APR-JUL	66	87	101	79	115	136	128
KETTLE near Laurier	APR-SEP	1420	1600	1730	88	1860	2040	1970
	APR-JUL	1360	1530	1640	88	1750	1920	1870
COLUMBIA at Birchbank (1,2)	APR-JUL	26970	30429	32000	92	33570	37030	34900
	APR-SEP	33601	37933	39900	92	41870	46200	43500
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	48743	55797	59000	92	62200	69260	64000
	APR-JUL	41000	46914	49600	92	52290	58200	53800

COLVILLE - PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROOSEVELT		NO REPORT		
BANKS		NO REPORT		

COLVILLE - PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

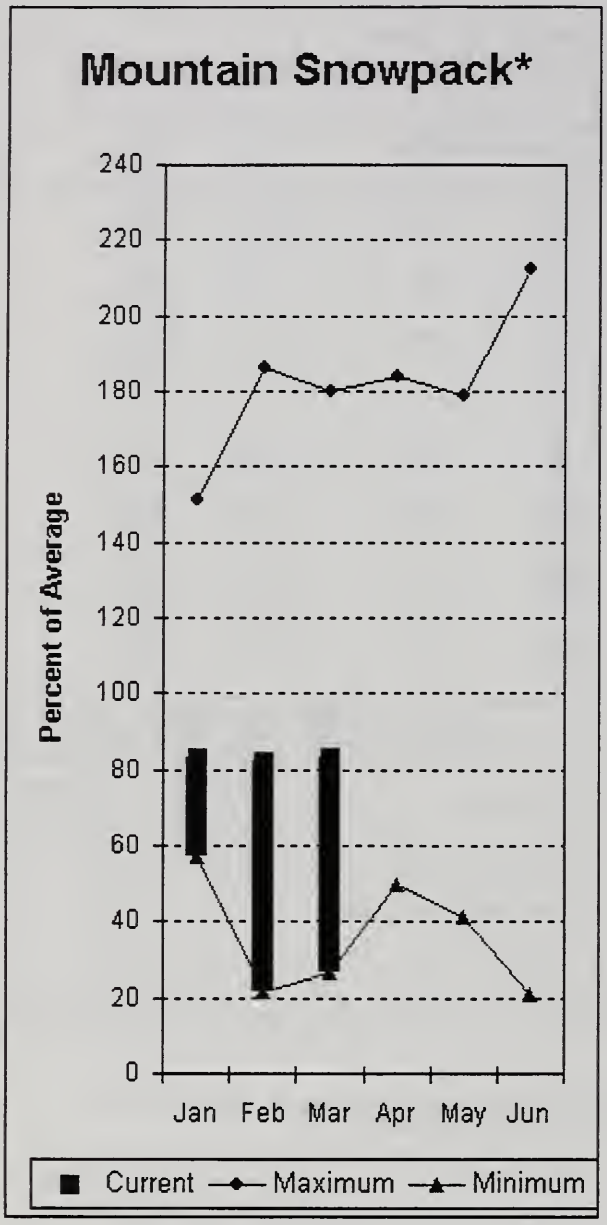
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	0	115	0
PEND OREILLE RIVER	10	124	93
KETTLE RIVER	2	116	114

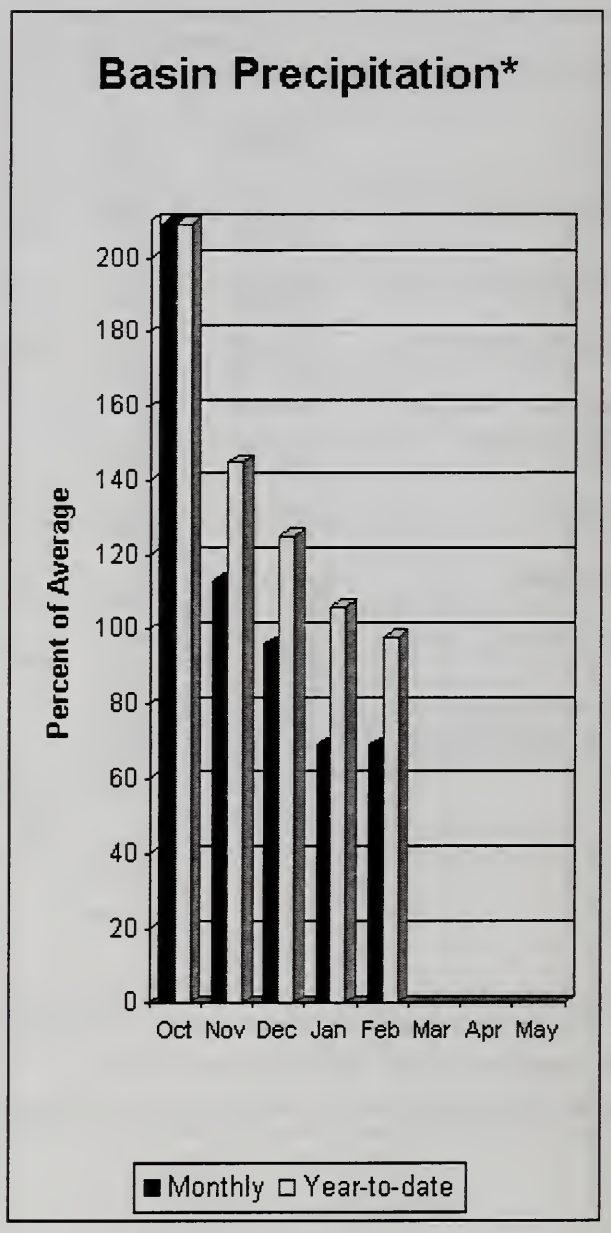
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Okanogan - Methow River Basins





*Based on selected stations

Summer runoff average forecast for the Okanogan River is 74%, Similkameen River is 79%, Methow River is 73% and Salmon Creek is 72%. March 1 snow cover on the Okanogan was 89% of average, Omak Creek was 80% and the Methow was 77%. February precipitation in the Okanogan-Methow was 69% of average, with precipitation for the water year at 98% of average. February streamflow for the Methow River was 95% of average, 56% for the Okanogan River and 76% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 8.6 inches. Average for this site is 10.1 inches on March 1. Combined storage in the Conconully Reservoirs was 10,300-acre feet, which is 44% of capacity and 60% of the March 1 average. Temperatures were slightly above average for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SIMILKAMEEN near Nighthawk (1)	APR-JUL	730	960	1070	79	1180	1410	1350
	APR-SEP	750	1030	1150	79	1270	1550	1450
OKANOGAN near Tonasket (1)	APR-JUL	560	980	1170	74	1360	1780	1580
	APR-SEP	700	1120	1310	74	1500	1920	1770
SALMON CREEK near Conconully	APR-JUL	13.6	14.4	14.9	75	15.4	16.2	20
	APR-SEP	13.9	14.7	15.2	72	15.7	16.5	21
BEAVER CREEK below SF near Twisp	APR-SEP	5.3	8.2	10.1	84	12.0	14.9	12.1
	APR-JUL	4.9	7.7	9.6	87	11.5	14.3	11.1
METHOW RIVER near Pateros	APR-SEP	465	615	715	73	815	970	985
	APR-JUL	575	650	700	77	750	825	910

OKANOGAN - METHOW RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE	10.5	5.0	3.1	8.4
CONCONULLY RESERVOIR	13.0	5.3	3.7	8.7

OKANOGAN - METHOW RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

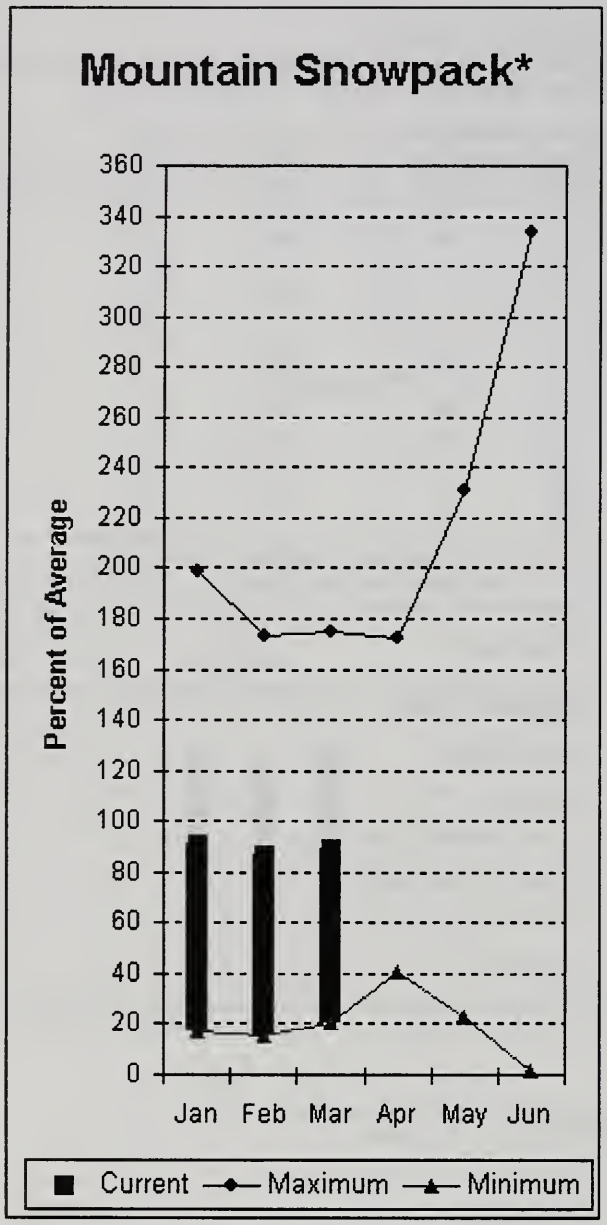
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	5	119	84
OMAK CREEK	3	89	80
SANPOIL RIVER	2	109	83
SIMILKAMEEN RIVER	0	0	0
TOATS COULEE CREEK	1	67	76
CONCONULLY LAKE	3	87	92
METHOW RIVER	5	107	77

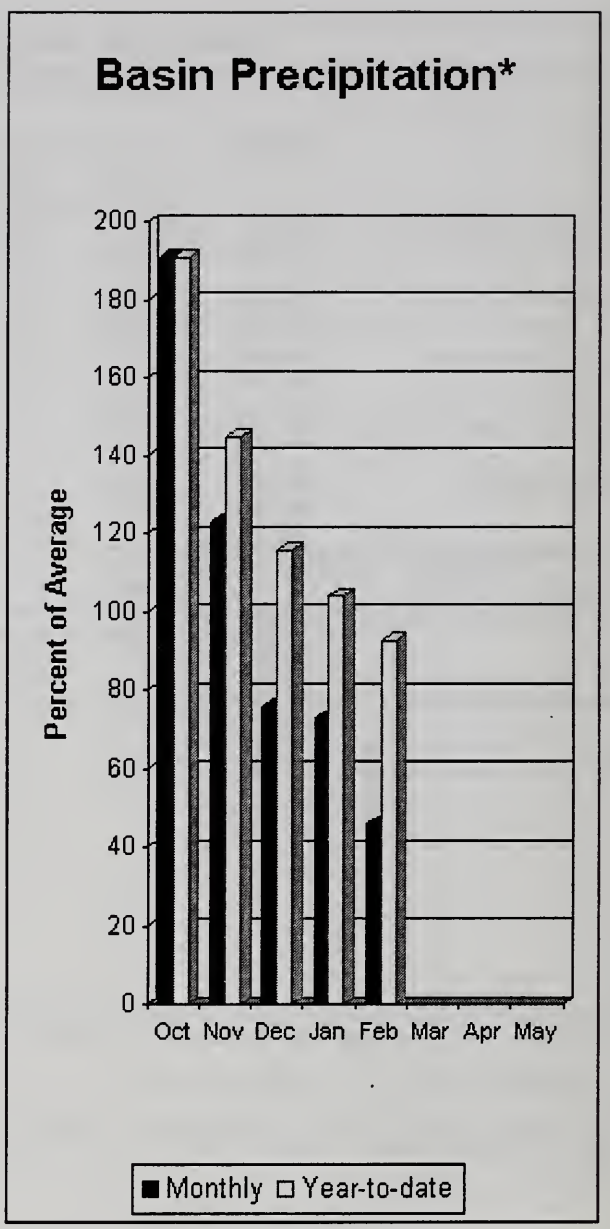
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Wenatchee - Chelan River Basins





*Based on selected stations

Precipitation during February was 46% of average in the basin and 93% for the year-to-date. Runoff for Entiat River is forecast to be 74% of average for the summer. The March-September average forecast for Chelan River is 79%, Wenatchee River at Plain is 74%, Stehekin is 80%, Icicle Creek is 88% and Stemilt Creek 112%. February average streamflows on the Chelan River were 87% and on the Wenatchee River 74%. March 1 snowpack in the Wenatchee River Basin was 83% of average; the Chelan, 68%; the Entiat, 81%; Stemilt Creek, 107% and Colockum Creek, 107%. Reservoir storage in Lake Chelan was 316,000-acre feet, 126% of March 1 average and 47% of capacity. Park Creek Ridge SNOTEL had the most snow water with 34.6 inches of water. This site would normally have 44.1 inches on March 1. Temperatures were near normal for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<======= Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CHELAN RIVER near Chelan	APR-SEP	780	880	945	79	1015	1105	1190
	APR-JUL	700	780	835	80	890	975	1050
STEHEKIN near STEHEKIN	APR-SEP	555	620	665	80	710	775	830
	APR-JUL	480	530	565	81	600	650	700
ENTIAT RIVER nr Ardenvoir	APR-SEP	144	164	178	74	192	210	240
	APR-JUL	133	151	164	76	177	195	215
WENATCHEE at Plain	APR-SEP	730	830	890	74	950	1050	1200
	APR-JUL	700	770	820	76	870	940	1080
WENATCHEE R. at Peshastin	APR-SEP	989	1240	1410	86	1580	1830	1640
	APR-JUL	788	1075	1270	86	1465	1750	1480
STEMILT CK nr Wenatchee (miner's in)	MAY-SEP	109	136	154	112	172	199	138
ICICLE CREEK near Leavenworth	APR-SEP	270	290	305	88	320	340	345
	APR-JUL	250	265	280	88	295	310	320
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	55056	60501	64200	92	67900	73340	69500
	APR-JUL	44806	50578	54500	92	58420	64190	59000

WENATCHEE - CHELAN RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	316.0	276.5	250.1

WENATCHEE - CHELAN RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

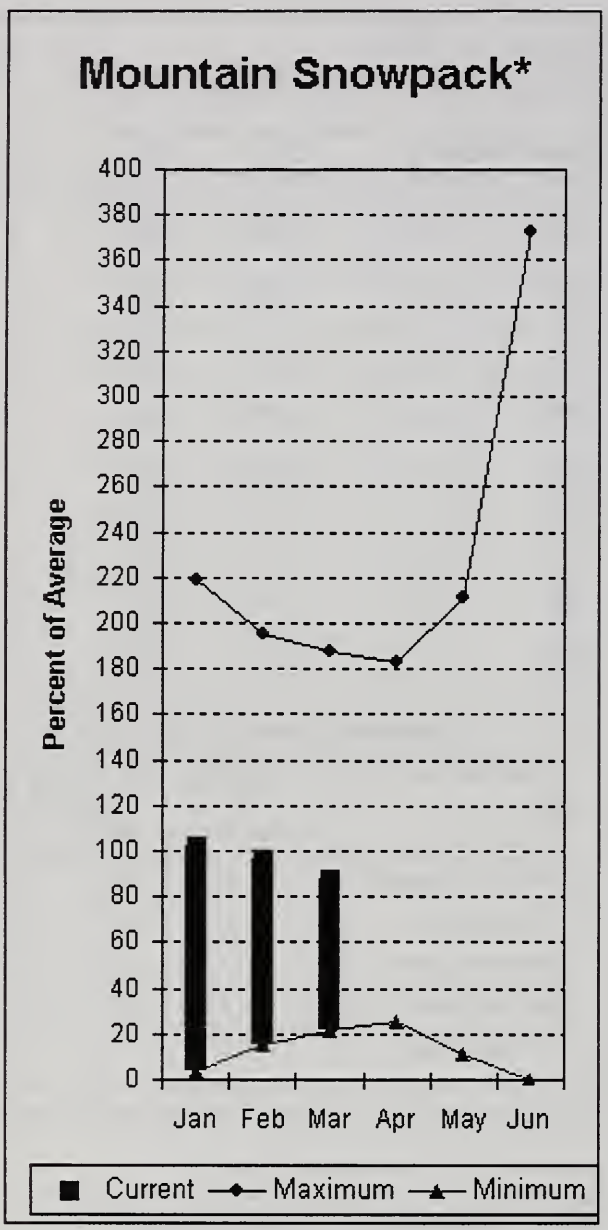
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	4	100	68
ENTIAT RIVER	2	94	81
WENATCHEE RIVER	13	121	83
STEMILT CREEK	2	116	107
COLOCKUM CREEK	2	90	107

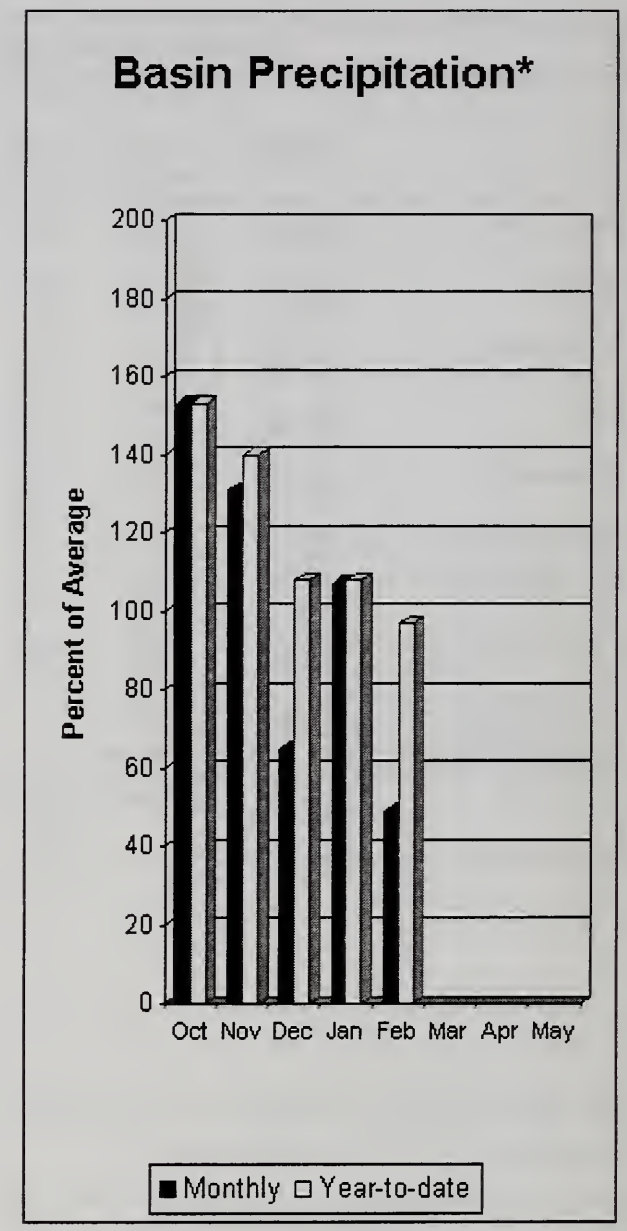
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Upper Yakima River Basin





*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 348,600-acre feet, 70% of average. Forecasts for the Yakima River at Cle Elum are 84% of average and the Teanaway River near Cle Elum is at 72%. Lake inflows are all forecasted to be in the 84% - 88% range this summer. February streamflows within the basin were Yakima near Cle Elum at 66% and Cle Elum River near Roslyn at 67%. March 1 snowpack was 88% based upon 12 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 49% of average for February and 97% year-to-date for water. Temperatures were near normal for the past 28 days and near average for the water year. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
KEECHELUS LAKE INFLOW	APR-JUL	88	100	108	89	116	128	121
	APR-SEP	93	107	117	88	127	141	133
KACHESS LAKE INFLOW	APR-JUL	79	90	98	88	106	117	111
	APR-SEP	85	97	105	88	113	125	120
CLE ELUM LAKE INFLOW	APR-JUL	315	340	355	87	370	395	410
	APR-SEP	330	360	380	84	400	430	450
YAKIMA at Cle Elum	APR-JUL	630	685	720	88	755	810	820
	APR-SEP	685	750	790	88	830	895	900
TEANAWAY near Cle Elum	APR-JUL	87	96	103	72	110	119	143
	APR-SEP	89	98	105	72	112	121	146

UPPER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	66.7	53.0	102.4
KACHESS	239.0	110.8	151.8	154.7
CLE ELUM	436.9	171.1	219.5	241.4

UPPER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2004

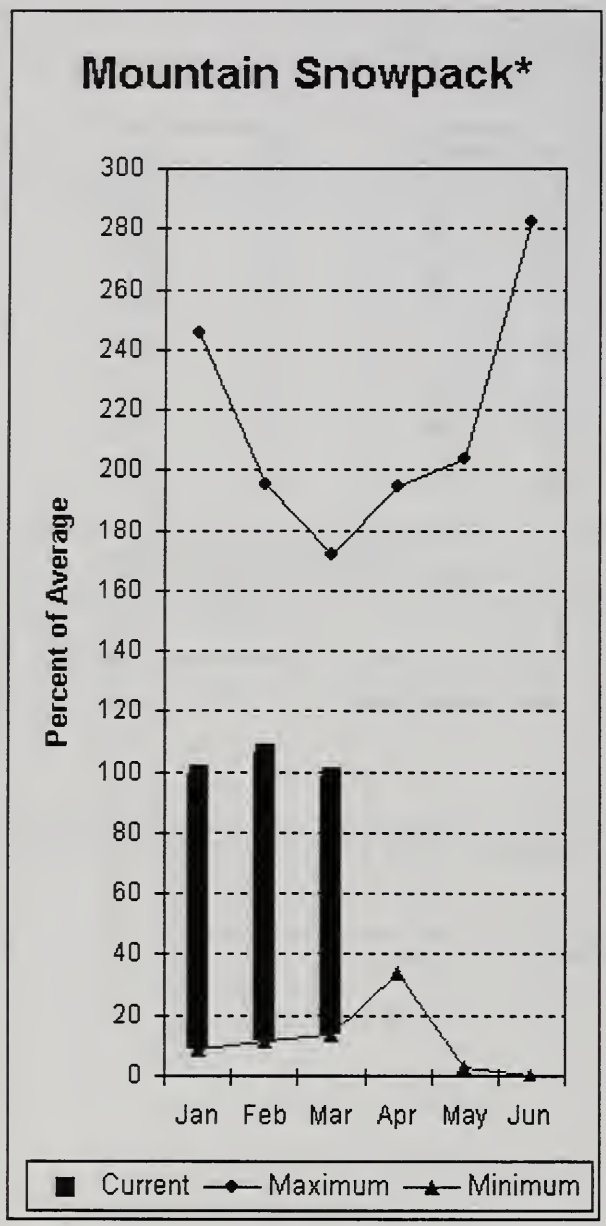
Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER YAKIMA RIVER	12	148	88

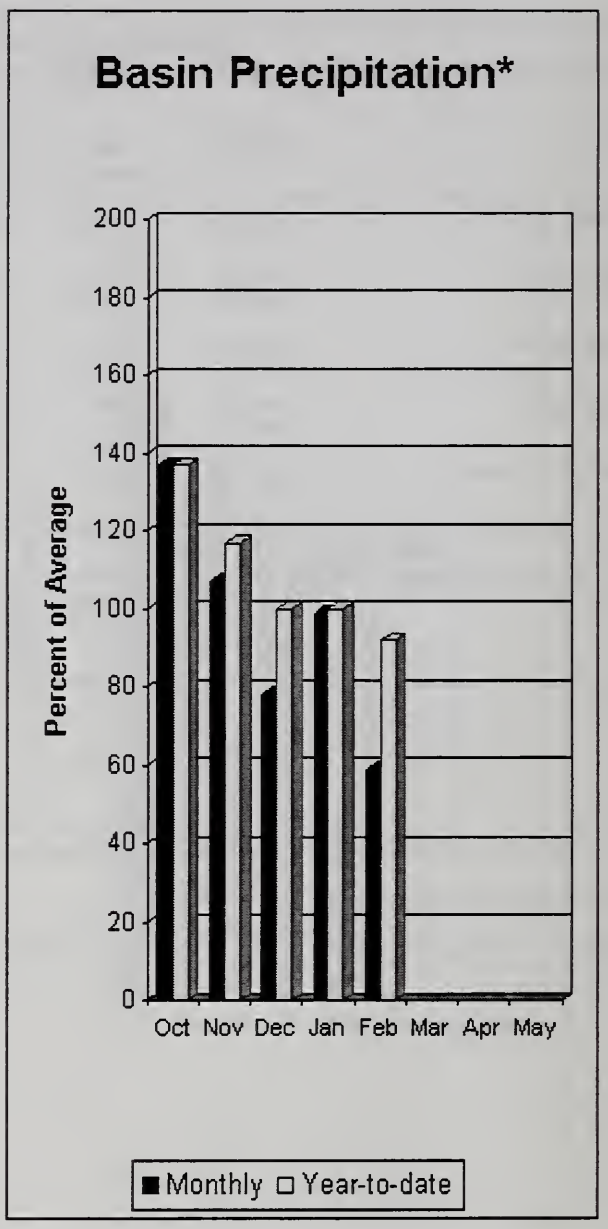
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Lower Yakima River Basin





*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 57%; Naches River near Naches, 53%; and Yakima River at Kiona, 62%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 103,400-acre feet, 75% of average. Forecast averages for Yakima River near Parker are 94%; American River near Nile, 96%; Ahtanum Creek, 85%; and Klickitat River near Glenwood, 95%. March 1 snowpack was 98% based upon 8 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 59% of average for February and 92% year-to-date for water. Temperatures were near normal for the past 28 days and near average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
BUMPING LAKE INFLOW	APR-SEP	95	109	118	89	127	141	132
	APR-JUL	88	101	109	89	117	130	122
AMERICAN RIVER near Nile	APR-SEP	97	107	113	96	119	129	118
	APR-JUL	89	98	104	96	110	119	108
RIMROCK LAKE INFLOW	APR-SEP	179	200	215	90	230	250	240
	APR-JUL	158	174	185	90	194	214	205
NACHES near Naches	APR-SEP	645	715	765	91	815	885	840
	APR-JUL	585	650	695	91	740	805	760
AHTANUM CREEK nr Tampico (2)	APR-SEP	21	32	39	85	46	57	46
	APR-JUL	19.8	29	36	86	43	52	42
YAKIMA near Parker	APR-SEP	1530	1690	1800	94	1910	2070	1920
	APR-JUL	1400	1540	1630	94	1720	1860	1730
KLICKITAT near Glenwood	APR-JUN	99	112	120	93	128	141	129
	APR-SEP	126	143	155	95	167	184	163

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

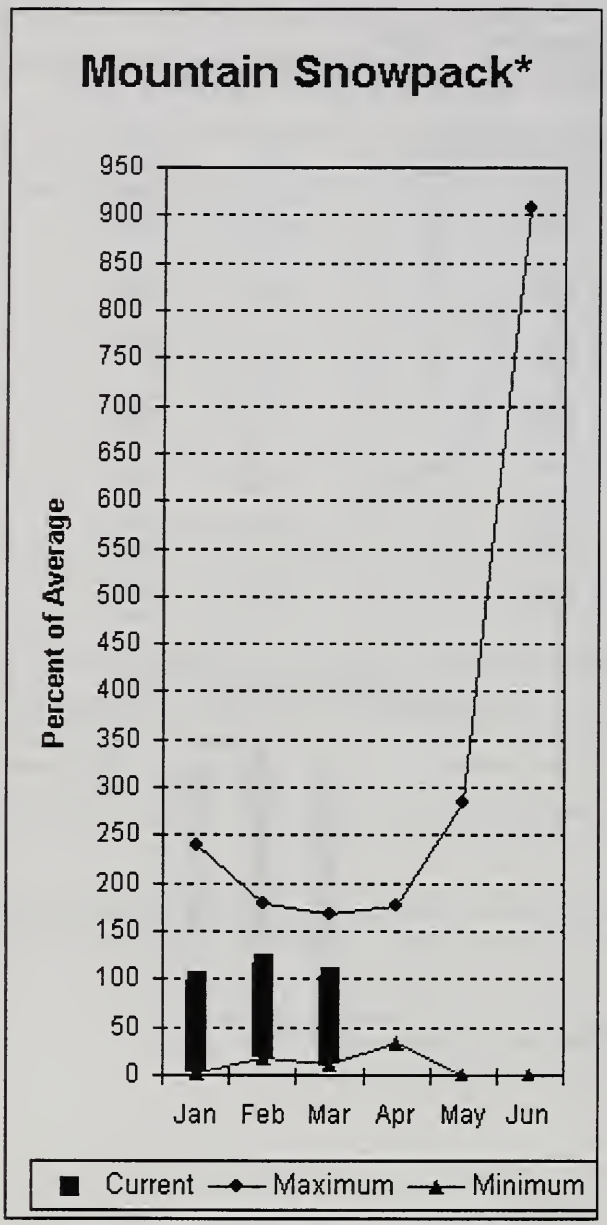
LOWER YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

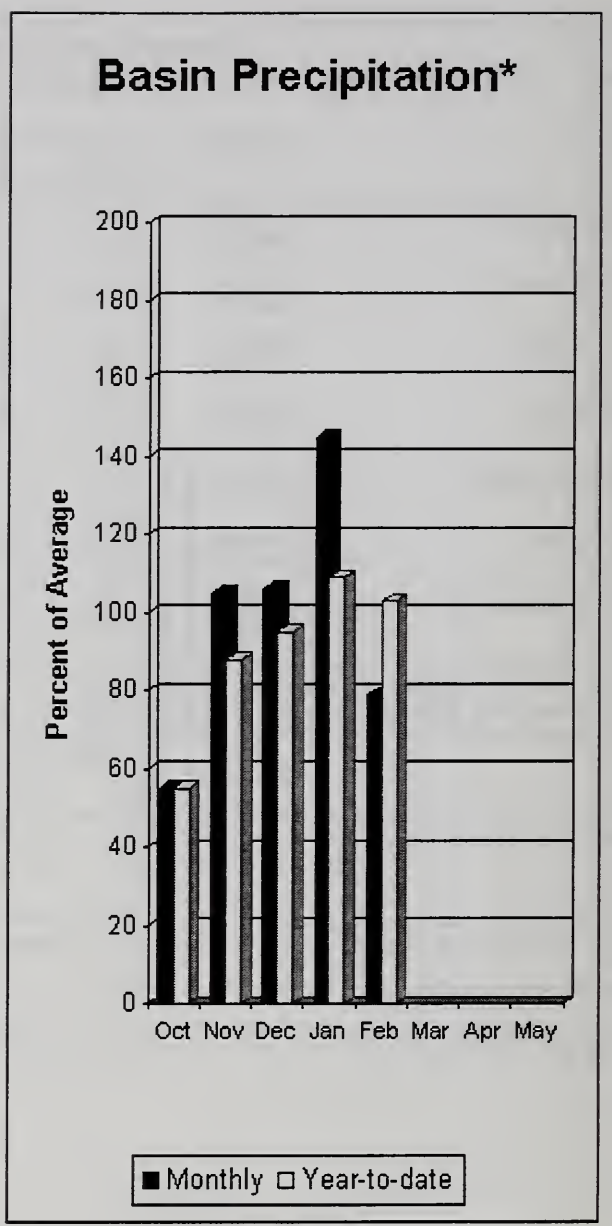
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BUMPING LAKE	33.7	10.3	21.2	11.5
RIMROCK	198.0	93.1	136.1	126.1

LOWER YAKIMA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average

Walla Walla River Basin





*Based on selected stations

February precipitation was 79% of average, maintaining the year-to-date precipitation at 103% of average. Snowpack in the basin was 102% of average. Streamflow forecasts are 98% of average for Mill Creek and 100% for the SF Walla Walla near Milton-Freewater. February streamflow was 100% of average for the Walla Walla River. Average temperatures were 1-2 degrees above normal for the past 28 days and 1 degree below average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MILL CREEK at Walla Walla	APR-SEP	10.6	15.0	18.0	98	21	25	18.4
	APR-JUL	10.1	14.5	17.5	96	21	25	18.2
SF WALLA WALLA near Milton-Freewater	APR-JUL	44	50	54	100	58	64	54
	APR-SEP	56	62	67	100	72	78	67

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	177	102

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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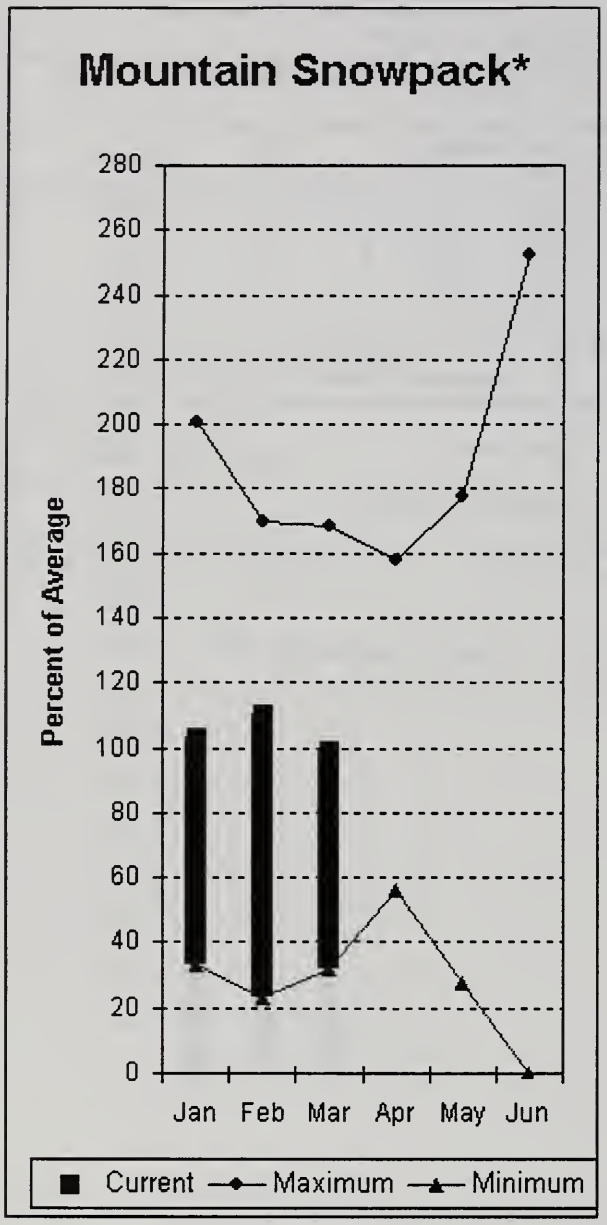
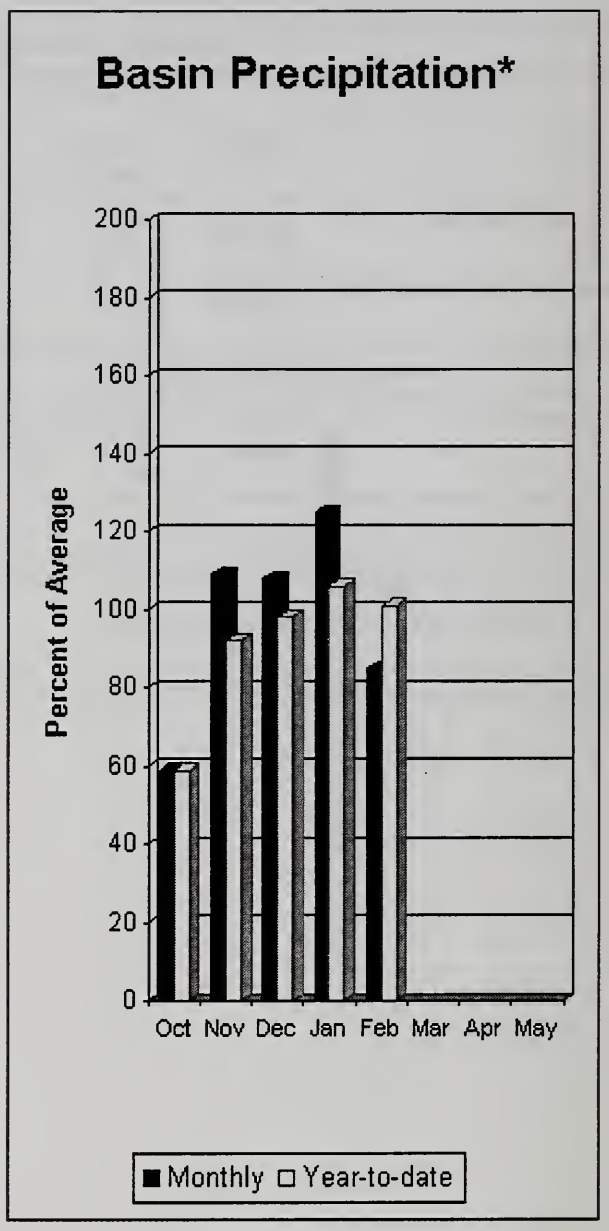
Lower Snake River Basin





*Based on selected stations

The April - September forecast is for 95% for Clearwater River at Spalding. The Snake and Grande Ronde rivers can expect summer flows to be about 95% of normal. February precipitation was 85% of average, bringing the year-to-date precipitation to 101% of average. March 1 snowpack readings averaged 99% of normal. February streamflow was 63% of average for Snake River below Lower Granite Dam and 72% for Grande Ronde River near Troy. Average temperatures were 1-2 degrees above normal for the past 28 days and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GRANDE RONDE at Troy (1)	MAR-JUL	1340	1643	1780	113	1917	2220	1580
	APR-SEP	1181	1455	1580	115	1705	1980	1370
CLEARWATER at Spalding (1,2)	APR-JUL	4630	6280	7030	95	7780	9430	7430
	APR-SEP	5040	6690	7440	95	8190	9840	7850
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	13130	18129	20400	94	22670	27670	21600
	APR-SEP	14631	20249	22800	95	25350	30970	24100

LOWER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

LOWER SNAKE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LOWER SNAKE, GRANDE RONDE	17	140	99

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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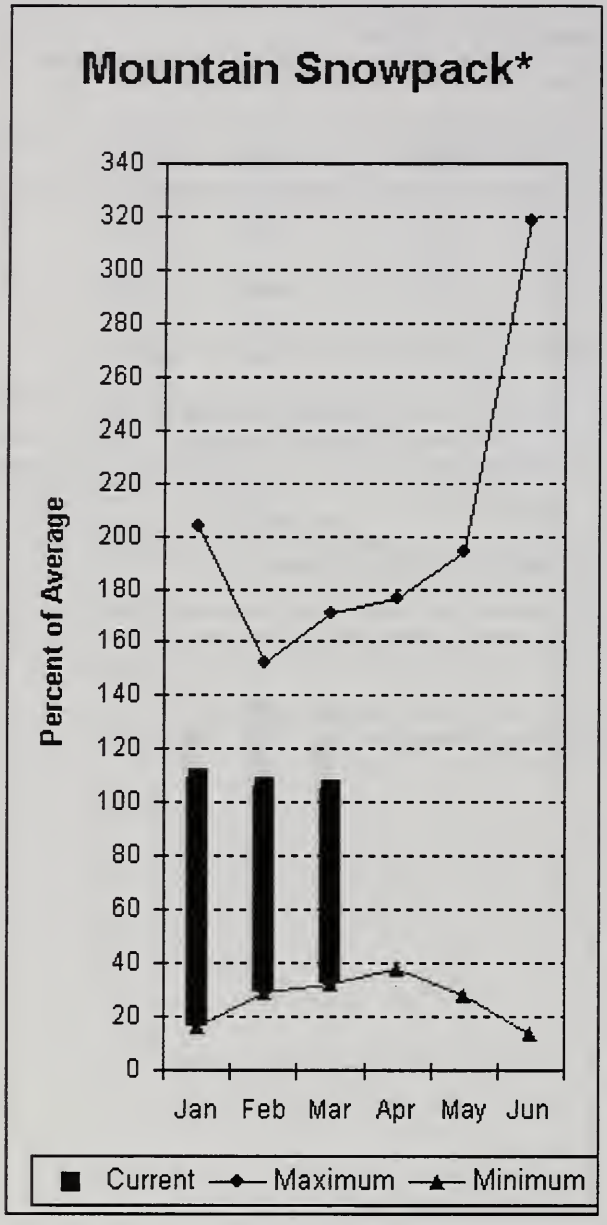
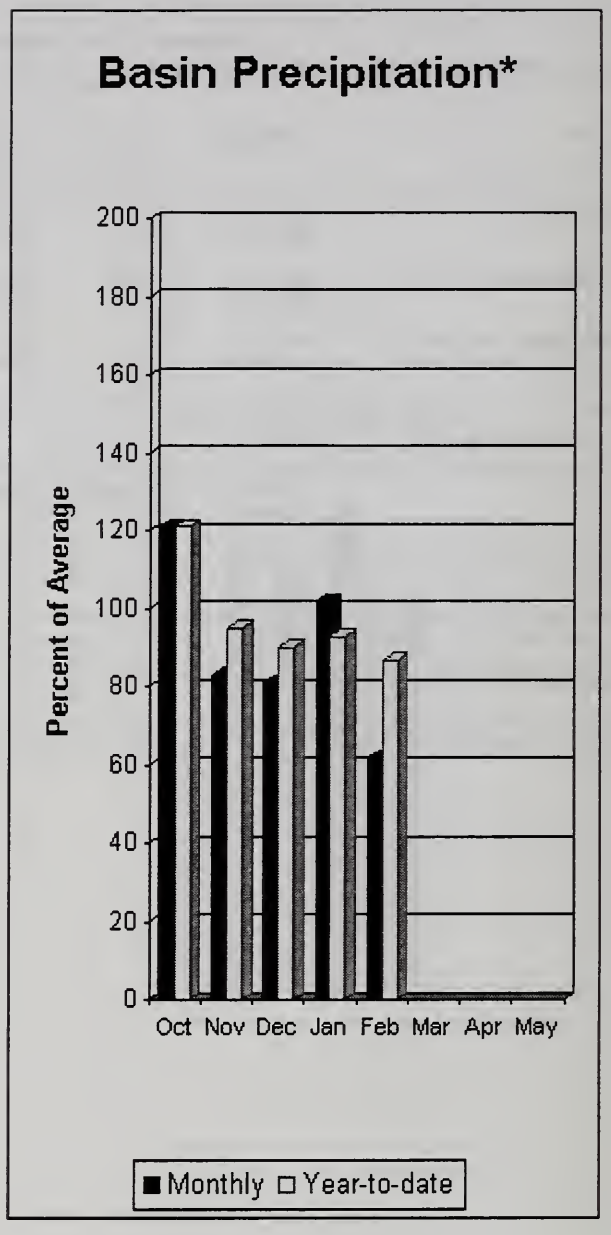
Cowlitz - Lewis River Basins





*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 102% and Cowlitz River at Castle Rock, 103% of average. The Columbia River at The Dalles is forecasted to have 90%of average flows this summer. February average streamflow for Cowlitz River was 88% and 79% for Lewis River. The Columbia River at The Dalles was at 74% of average. February precipitation was 62% of average and the water-year average was 87%. March 1 snow cover for Cowlitz River was 99%, and Lewis River was 111% of average. Average temperatures were 2 degrees above normal during the past 28 days and 1 degree above normal throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	APR-JUL	746	915	1030	100	1145	1314	1031
	APR-SEP	909	1082	1200	102	1318	1491	1176
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	1010	1582	1970	103	2358	2930	1922
	APR-JUL	774	1343	1730	102	2117	2686	1689
COWLITZ R. at Castle Rock (2)	APR-SEP	1322	2125	2670	101	3215	4018	2639
	APR-JUL	1506	1991	2320	101	2649	3134	2295
KLICKITAT near Glenwood	APR-JUN	99	112	120	93	128	141	129
	APR-SEP	126	143	155	95	167	184	163
COLUMBIA R. at The Dalles (2)	APR-SEP	75188	83293	88800	90	94310	102410	98600
	APR-JUL	60641	69905	76200	90	82490	91760	84600

COWLITZ - LEWIS RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	4	215	111
COWLITZ RIVER	6	170	102

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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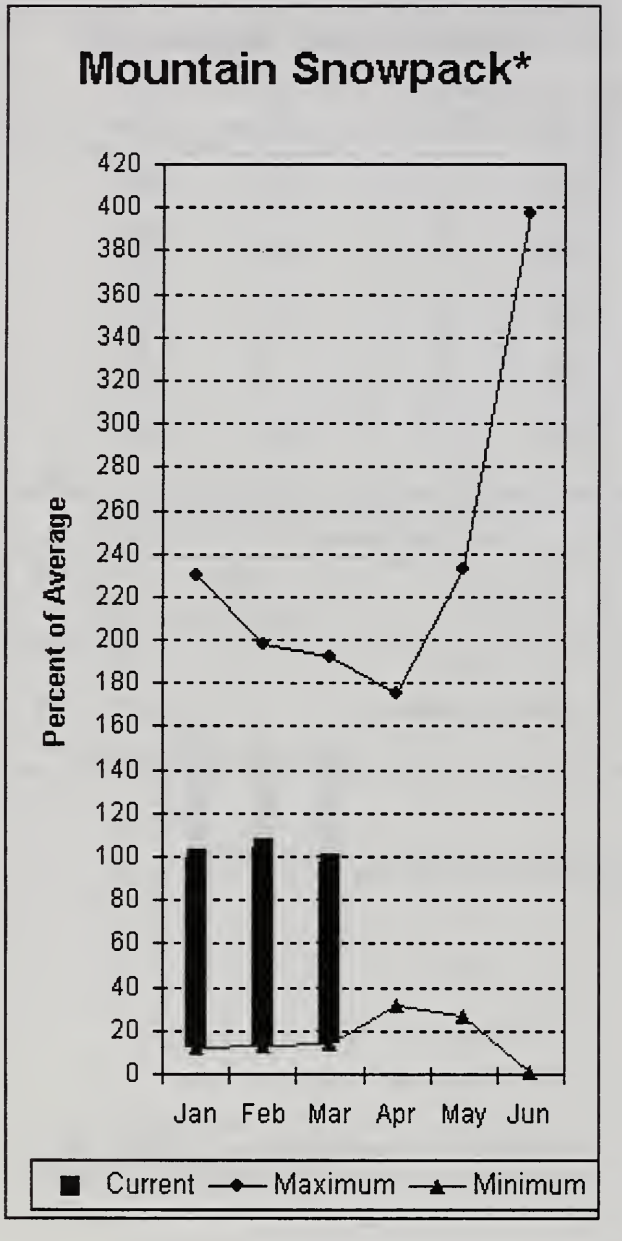
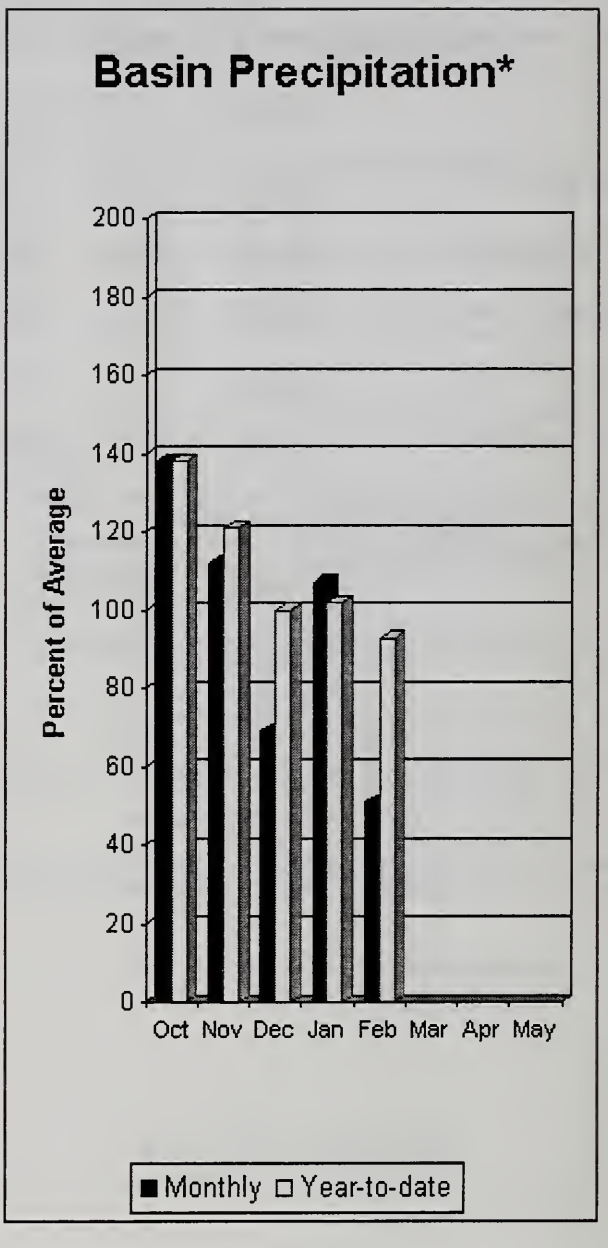
White - Green River Basins





*Based on selected stations

Summer runoff is forecast to be 103% of normal for the Green River below Howard Hanson Dam and 103% for the White River near Buckley. March 1 snowpack was 98% of average in both White River and Puyallup River basins and 97% in Green River Basin. Water content on March 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 29.9 inches. This site has a March 1 average of 29.5 inches. February precipitation was 51% of average, bringing the water year-to-date to 93% of average for the basins. Average temperatures in the area were 1 degree above normal for the past 28 days and near normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WHITE near Buckley (1,2)	APR-JUL	368	431	460	105	489	552	440
	APR-SEP	440	516	550	103	584	660	534
GREEN below Howard Hanson (1,2)	APR-JUL	176	227	250	103	273	324	243
	APR-SEP	196	250	275	103	300	354	268

WHITE - GREEN - PUYALLUP RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WHITE - GREEN - PUYALLUP RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	3	133	98
GREEN RIVER	7	233	97
PUYALLUP RIVER	3	133	98

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

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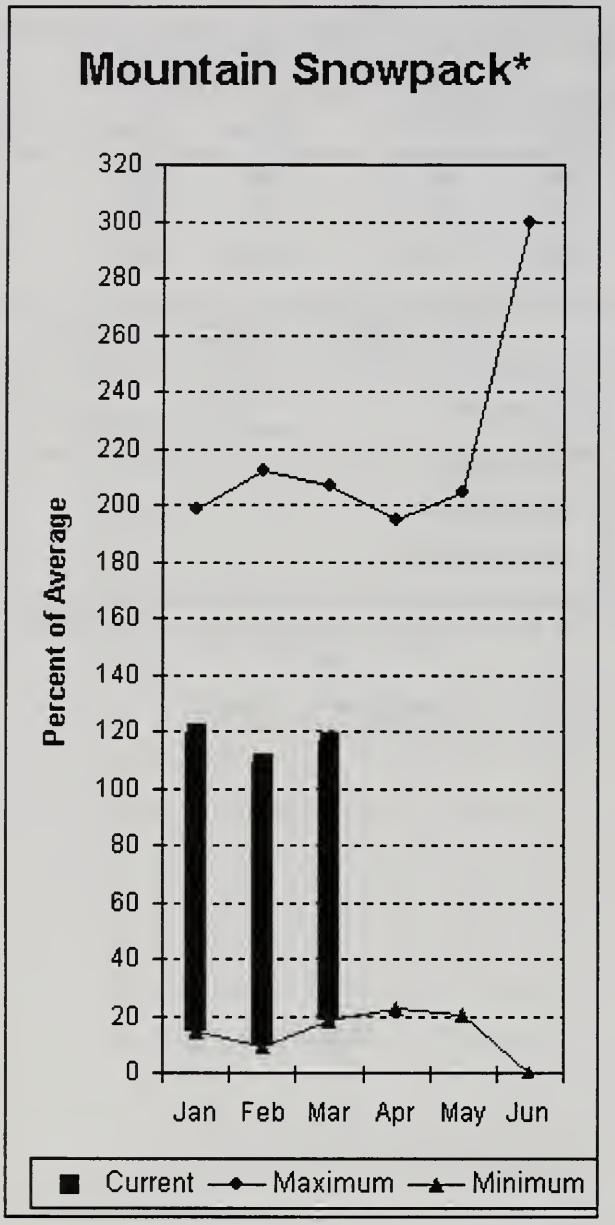
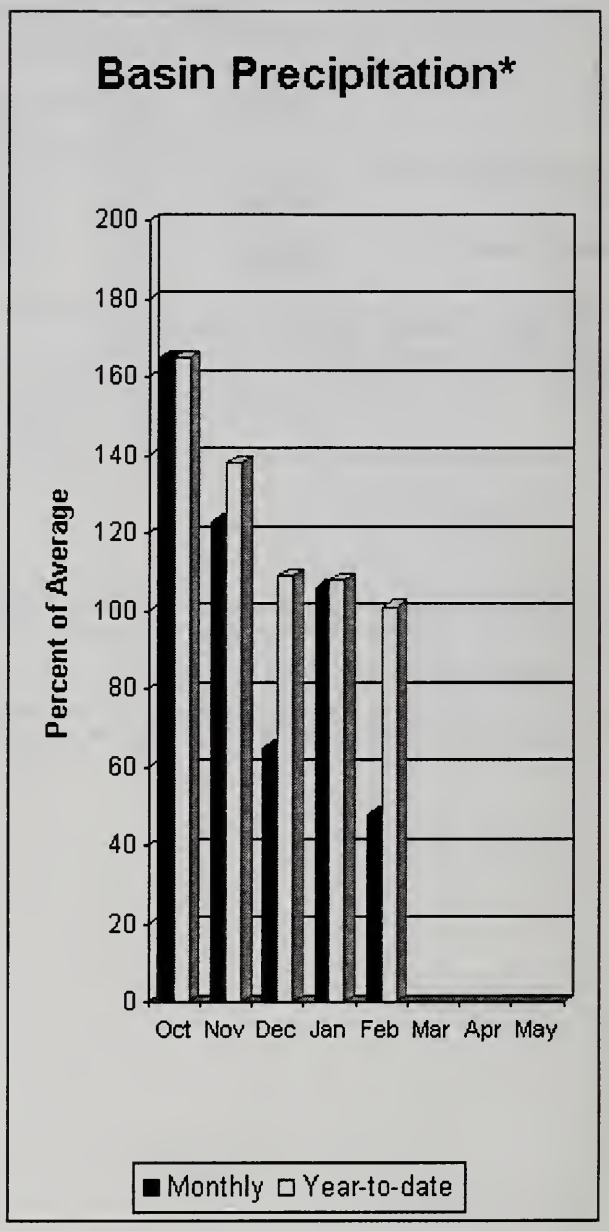
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Central Puget Sound River Basins





*Based on selected stations

Forecast for spring and summer flows are: 100% for Cedar River near Cedar Falls; 104% for Rex River; 107% for South Fork of the Tolt River; and 104% for Cedar River at Cedar Falls. Basin-wide precipitation for February was 48% of average, bringing water-year-to-date to 101% of average. March 1 average snow cover in Cedar River Basin was 110%, Tolt River Basin was 137%, Snoqualmie River Basin was 108%, and Skykomish River Basin was 108%. Alpine Meadows SNOTEL site, at 3500 feet, had 47.8 inches of water content. Average March 1 water content is 36.5 inches at Olallie Meadows. Temperatures were 1 degree above average for the past 28 days and near normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CEDAR near Cedar Falls	APR-JUL	55	66	73	100	80	91	73
	APR-SEP	61	72	80	100	88	99	80
REX near Cedar Falls	APR-JUL	17.9	23	26	104	29	34	25
	APR-SEP	20	25	29	104	33	38	28
CEDAR RIVER at Cedar Falls	APR-JUL	55	68	77	104	86	99	74
	APR-SEP	54	67	76	104	85	98	73
SOUTH FORK TOLT near Index	APR-JUL	13.2	14.8	15.8	108	16.8	18.4	14.7
	APR-SEP	14.7	16.7	18.0	107	19.3	21	16.9

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

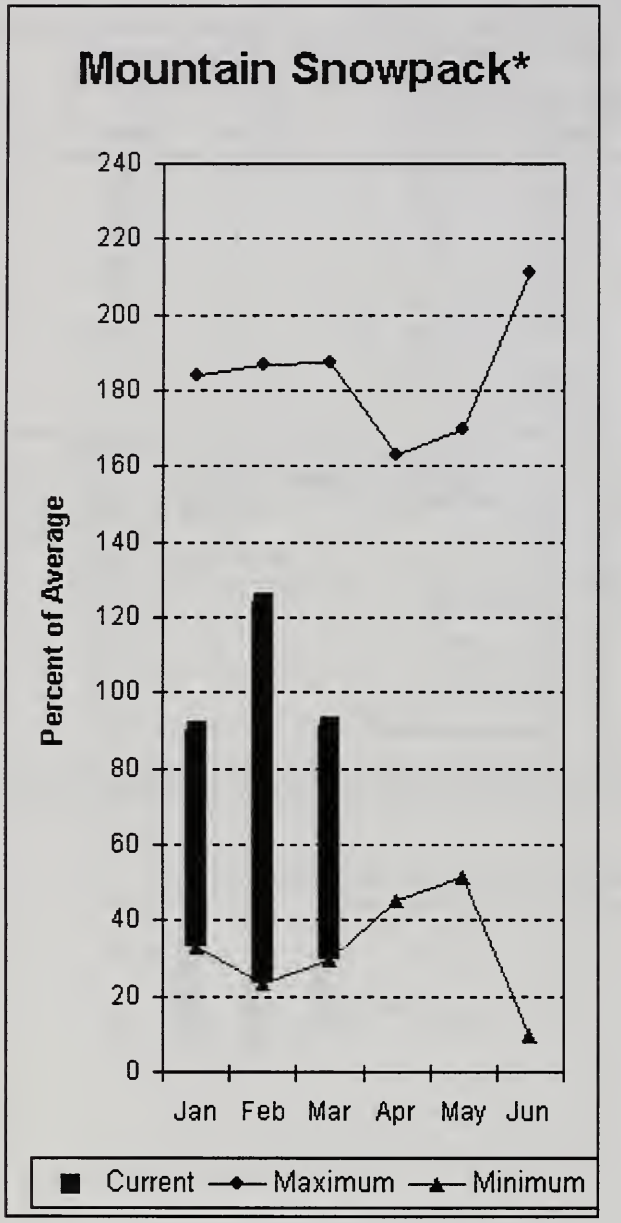
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	4	258	110
TOLT RIVER	3	422	137
SNOQUALMIE RIVER	6	234	108
SKYKOMISH RIVER	4	238	108

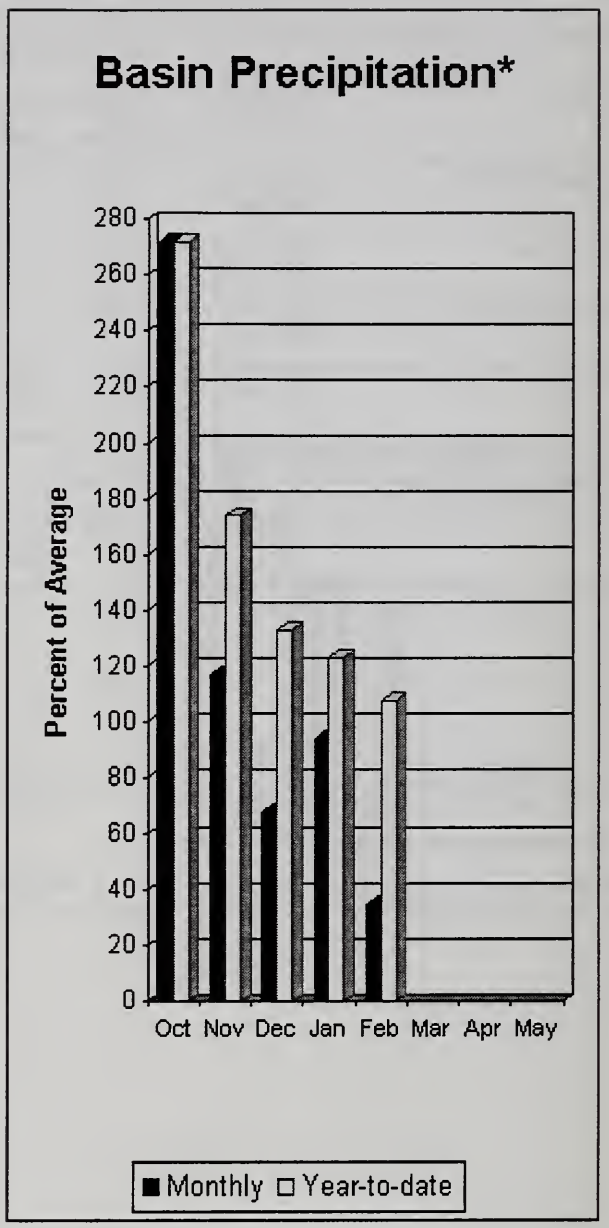
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

North Puget Sound River Basins





*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 93% of average for the spring and summer period. February streamflow in Skagit River was 60% of average. Other forecast points included Baker River at 94% and Thunder Creek at 93% of average. Basin-wide precipitation for February was 35% of average, bringing water-year-to-date to 108% of average. March 1 average snow cover in Skagit River Basin was 82%, Baker River Basin was at 87% and Nooksack River Basin was 103%. Rainy Pass SNOTEL, at 4,780 feet, had 26 inches of water content. Average March 1 water content is 38.2 inches at Rainy Pass. March 1 Skagit River reservoir storage was 86% of average and 52% of capacity. Average temperatures for the past 28 days were slightly above normal for the basin and near average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	194	209	220	94	231	246	234
	APR-SEP	280	298	310	93	322	340	333
SKAGIT at Newhalem (2)	APR-JUL	1495	1623	1710	92	1797	1925	1864
	APR-SEP	1814	1955	2050	93	2145	2286	2217
BAKER RIVER near Concrete	APR-JUL	635	709	760	92	811	885	828
	APR-SEP	843	930	990	94	1050	1137	1050

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	689.2	960.9	818.3
DIABLO RESERVOIR	90.6	87.5	86.0	85.7
GORGE RESERVOIR	9.8	7.6	8.1	7.9

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

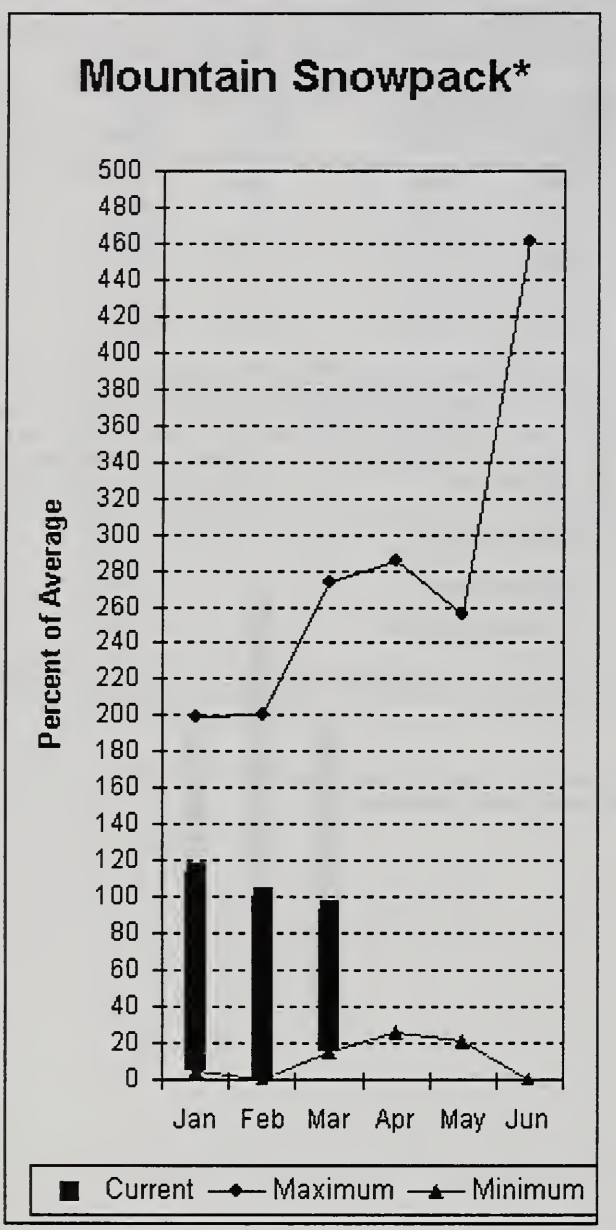
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	10	133	82
BAKER RIVER	2	152	87
NOOKSACK RIVER	2	217	103

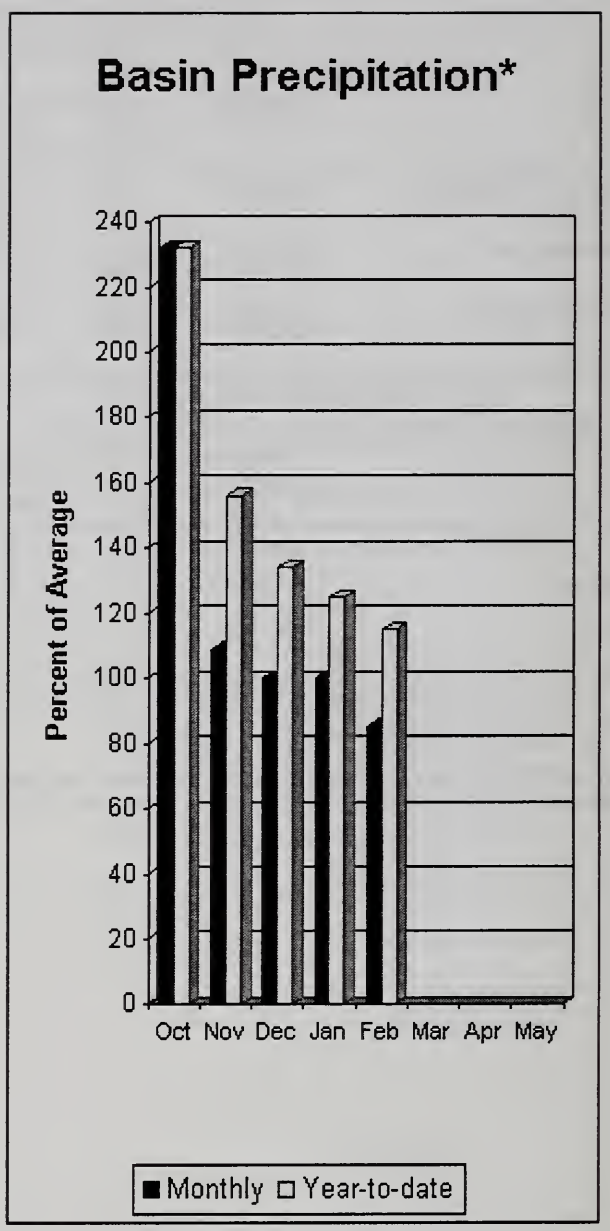
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Olympic Peninsula River Basins





*Based on selected stations

Forecasted average runoff for streamflow in the Dungeness River and Elwha River basins is 99% and 100% respectively. Big Quilcene and Wynoochee rivers should expect near average runoff this summer also. February precipitation was 85% of average. Precipitation has accumulated at 115% of average for the water year. February precipitation at Sequim was 1.23 inches. The thirty-year average for February is 1.28 inches. Olympic Peninsula snowpack averaged 93% of normal on March 1. Temperatures were 1-2 degrees above average for the past 28 days and near average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
DUNGENESS near Sequim	APR-SEP	133	143	150	99	157	167	152
	APR-JUL	107	115	120	97	125	133	124
ELWHA near Port Angeles	APR-SEP	432	474	503	100	532	574	503
	APR-JUL	365	397	419	100	441	473	419

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OLYMPIC PENINSULA	4	149	93

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada

Ministry of Sustainable Resources
Snow Survey, River Forecast Centre, Victoria, British Columbia

State

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal

Department of the Army
    Corps of Engineers
U.S. Department of Agriculture
    Forest Service
U.S. Department of Commerce
    NOAA, National Weather Service
U.S. Department of Interior
    Bonneville Power Administration
    Bureau of Reclamation
    Geological Survey
    National Park Service
    Bureau of Indian Affairs

Local

City of Tacoma
City of Seattle
Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company
Snohomish County P.U.D.
Colville Confederated Tribes
Spokane County
Yakama Indian Nation
Whatcom County
Pierce County

Private

Okanogan Irrigation District
Wenatchee Heights Irrigation District
Newman Lake Homeowners Association
Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA